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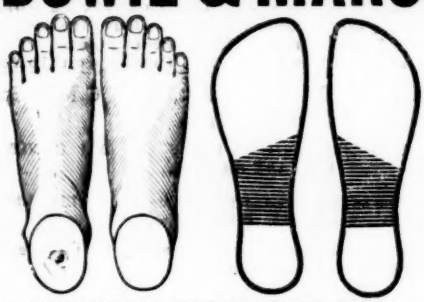

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The Relations OF TUBERCULOSIS TO WAR CONDITIONS.

WITH REMARKS ON SOME ASPECTS OF THE ADMINISTRATIVE CONTROL OF TUBERCULOSIS.[1]

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THE disturbed distribution of population caused by the war renders it impracticable to give accurate local death-rates for tuberculosis in either sex or for tuberculosis in men for the whole country. Apart from such rates, the figures as to total deaths from pulmonary tuberculosis in England and Wales in recent years are, however, instructive. The table below shows that, comparing the experience of 1913, the last complete year before the war, with subsequent years, the deaths from pulmonary tuberculosis increased by 1582 in the year 1914, by 4621 in 1915, and by 4490 in 1916, the third year of war.

The increase was not confined to one sex. Comparing recent years once more with 1913, male deaths from pulmonary tuberculosis increased by 778 and female deaths by 804 in the first year of war; male deaths by 2596 and female deaths by 2025 in the second year of war; and male deaths by 2204 and female deaths by 2286 in the third year of war.

England and Wales.

Year.	Deaths from pulmonary tuberculosis.			Deaths from other forms of tuberculosis.			Deaths of persons from—		
	Males.	Females.	Total.	Males.	Females.	Total.	Pneumonia.	Bronchitis.	Influenza.
1911 ...	21,985	17,247	39,232	7,242	6,646	13,888	37,642	36,555	4,343
1912 ...	21,568	16,515	38,083	6,238	5,730	11,968	37,348	39,733	5,354
1913 ...	21,034	16,021	37,055	6,623	5,798	12,421	37,530	39,227	6,394
1914 ...	21,812	16,825	38,637	6,264	5,397	11,661	40,070	40,189	5,964
1915 ...	23,630	18,046	41,676	6,715	5,904	12,619	48,874	50,974	10,484
1916 ...	23,238	18,307	41,545	6,488	5,825	12,313	37,916	43,412	8,791

The increased mortality from pulmonary tuberculosis having been shared by both sexes, it must be inferred that conditions arose adversely affecting the health of persons of both sexes in these years.

It is natural to assume that the altered conditions of life during war-time were concerned in producing this effect; but this hypothesis needs to be considered in relation to collateral experience of other diseases, as shown in the above table.

The teaching of this table is brought out in the following table, in which the experience of deaths in 1913, under each disease, is stated by the relative figure 100.

England and Wales: Relative Mortality in 1913 (= 100) and in Subsequent Years from Certain Diseases.

Year.	Pulmonary tuberculosis.	Influenza.	Pneumonia.	Bronchitis.
1913 ...	100	100	100	100
1914 ...	104	93	107	103
1915 ...	112	164	130	130
1916 ...	112	138	101	111

It will be seen that increased mortality from pulmonary tuberculosis was associated in 1915 and 1916 with still more excessive mortality from influenza. This association is no new feature. It was seen markedly in the years 1890–91–92, and again in 1899–1900. The experience of 1915–16 is the third occurrence in recent years of this coincidence; and there can be no doubt that influenza is a most dangerous complication of pulmonary tuberculosis.

It is noteworthy that the deaths from pulmonary tuberculosis in both 1915 and 1916 were 12 per cent. in excess of those in 1913, but that in 1916 the deaths from pneumonia had ceased to occur in excessive numbers, while an excess in deaths from influenza and from bronchitis continued on a smaller scale than in 1915. Whether this justifies the conclusion that the influenza element in the causation of excessive mortality from pulmonary tuberculosis was shared in 1916 by special war conditions to a greater extent than in 1915 cannot be stated with certainty. Probably both in 1915 and 1916 war conditions have borne an important part in the excessive mortality from all the diseases enumerated in the above table. There has been inter-communication between different localities on a much larger scale than in normal times, and catarrhal infections—including cerebro-spinal fever, as well as the above-mentioned diseases—have been rife.

It has been noted that the excessive mortality from pulmonary tuberculosis has affected both sexes. In both sexes the conditions favouring this excess, apart from catarrhal infections, have probably been similar.

Men in the Army and men and women in industrial employment, notwithstanding the efforts to minimise these results, have been exposed to conditions leading to the spread of tuberculosis and to the calling into activity of latent disease. A large number of unrecognised or partially recovered consumptives have entered the Army or have been employed at high wages in munition and other works. In many instances there have been overwork and excessive exposure to irritating dust. Commonly, also, owing to great migrations of military and civil population, there has been overcrowding under conditions unfavourable to health. These are the outstanding facts. They will need to be further considered in the light of the current year's experience.

The experience in this country appears to coincide with that of the continental countries engaged in the present war. In all of them, so far as can be gathered from official information, tuberculosis appears to have been more rife and more fatal than prior to the war. It is proper to state that this unfavourable record would almost certainly have been worse but for the organised efforts to improve housing conditions in areas the population of which has been swollen by war work, and especially for the efforts made by the Government to secure improved conditions of work for munition workers, as well as to cope with the special housing difficulties which have arisen. I may draw attention, furthermore, to the fact that notwithstanding the increase in the population of England and Wales in the interval, the deaths from pulmonary tuberculosis were fewer than in so recent a year as 1902.

Tuberculosis and the war.—In May, 1916, the Local Government Board, after consultation with the Army Council, circularised the local authorities concerned in tuberculosis schemes, asking them to arrange for their tuberculosis officers to assist the military authorities in the examination of recruits suspected to be suffering from tuberculosis. The action taken in response to this appeal has been of material assistance to the military authorities.

About the same time the Board issued a general Order extending their Tuberculosis Regulations and making it obligatory on every medical officer of health to send to the Army Council, London, a list of all male persons between the ages of 18 and 45 who had already been notified to the medical officer of health as suffering from tuberculosis, and to keep the list up to date by the sending of weekly lists of newly notified males between the same ages to the Army Council. By this means it has been possible for the Army Council to inform each Medical Board of the names of tuberculous men in their respective areas.

REVIEW OF THE POSITION AS TO THE ADMINISTRATIVE CONTROL OF TUBERCULOSIS.

In view of the association of war conditions with considerable increase of pulmonary tuberculosis, it appears desirable to gives a summarised statement of the action specially directed in recent years to the control of tuberculosis. Prior to 1911 excellent local work had been done in a relatively small number of areas in direct efforts to control the spread of tuberculosis, in addition to the previous

[1] From the Annual Report of the Medical Officer of the Local Government Board for 1916–17, with permission of H.M. Stationery Office.

general measures, such as improved sanitation, better housing, more satisfactory nutrition, and especially the hospital treatment of a considerable proportion of sickness generally, including a large proportion of the advanced cases of tuberculosis. The important measures directed to the reduction of infection from bovine infection are not included in this analysis; but it may be noted that the final report of the last Royal Commission on Tuberculosis appeared in 1911; and that although the prevention of the possibility of human infection from cow's milk is still very incomplete, the pasteurisation or boiling of milk for human consumption is more generally practised than in the past. The Milk and Dairies Act of 1914 will provide after the war the machinery for much more efficient control over bovine tuberculosis.

The steps towards direct administrative control of tuberculosis may be summarised as follows:—

Compulsory notification of Pulmonary Tuberculosis, Poor-law cases from Jan. 1st, 1909.

Compulsory notification of Pulmonary Tuberculosis, Hospital cases from May 1st, 1911.

Compulsory notification of Pulmonary Tuberculosis, Cases in the general population from Jan. 1st, 1912.

Compulsory notification of all forms of Tuberculosis, Cases in the general population from Feb. 1st, 1913

National Insurance Act, 1911, Sanatorium Benefit, coming into operation, July, 1912.

Finance Act, 1911, provided capital of £1,116,000 in England and Wales for erection of sanatoria.

The Departmental Committee on Tuberculosis reported on April 3rd, 1912, that any scheme which is to form the basis of an attempt to deal with the problem of tuberculosis should be available for the whole community and that the organisation of schemes would best be undertaken by the county and county borough councils. These recommendations were adopted by the Government, which undertook to provide out of the Imperial Exchequer one-half the net annual cost of schemes for the general treatment of tuberculosis which were approved by the Local Government Board. Following on the above, county councils and county borough councils were invited to formulate and carry into effect schemes for the provision of institutional treatment at dispensaries and in residential institutions; and such schemes have come into operation to a greater or less extent in most areas.

The extent to which schemes for the treatment of tuberculosis have come into operation may be gathered from the following comparative figures. In England in 1911 local authorities (other than Poor-law authorities) had about 1300 beds for the institutional treatment of tuberculosis, while there were 4200 beds in private sanatoria and voluntary institutions. In June, 1916, the number of beds provided by public health authorities had increased to 6072, and voluntary beds to 5821, a total of 11,893 as compared with 5500 in 1911. In 1911 there were only about 25-30 tuberculosis dispensaries. In 1917 this number had increased to 371. During 1912 and 1913 the Board's officers were engaged, with varying success, in persuading county councils and county borough councils to make a beginning with the formulation and establishment of tuberculosis schemes, and in the detailed negotiations as to schemes put forward by the authorities who desired to proceed. These efforts in the first half of 1914 were obviously becoming increasingly successful; but the declaration of war in August soon prevented further developments of tuberculosis work and seriously crippled and reduced the efficiency of existing work. The curtailment and deterioration of the work already organised necessarily became more marked as the military demands for medical officers and for institutions increased.

It may be stated generally that: (1) In only a relatively small number of county areas have fairly completed arrangements for the institutional treatment of tuberculosis come into operation. In most county boroughs deficiency of provision is less marked. (2) Even when fairly complete arrangements have been made, these have usually been in full operation for a short period only, and have been crippled more or less during 1915 and 1916.

A few county borough councils, who had organised sanatorium treatment prior to the passing of the National Insurance Act, form exceptions to these statements. Much excellent work has been done under the dispensary and other institutional arrangements organised by local authorities; and many patients have been restored to health and a still larger number have had their working power partially or wholly restored, while the possibility of their continuing to be foci of infection has been minimised. It must, however, be realised that the schemes of local authorities as a rule have only recently been initiated, that during the stage following initiation the progress made has been somewhat slow, and that this progress has been stopped to a great extent during the war. The linking up of the different agencies required to secure the full benefit of the schemes, which was being gradually organised, has also been seriously retarded by the war.

The tuberculosis arrangements are closely related in every particular to the work of public health authorities, and in each of the following paragraphs the closeness of this relationship will appear. The difficulties and defects of the arrangements hitherto made are set out here with a view to future action directed to their removal.

These difficulties and defects may be considered under the following headings: (1) With relation to the patient; (2) with relation to the private practitioner; (3) with relation to tuberculosis officers; (4) with relation to sanatoria; (5) with relation to chronic and advanced cases of phthisis.

(1) *The patient.*—In normal times a large proportion of consumptive patients refrain from applying for treatment until disease is fully established and they are incapacitated for work. Not infrequently this means that the patient does not consult a doctor until within a few months or weeks of his death. This, in part at least, is due to the conditions of private practice for the mass of the population before medical benefit under the National Insurance Act came into operation and tuberculosis dispensaries were established. Prior to this, if the patient was not a member of a "club," the fee payable to a doctor discouraged the patient from seeking advice for what appeared to be a relatively trivial ailment.

Education of the public as to the need to seek for advice for protracted coughs and colds or for other symptoms suggestive of the possibility of tuberculosis is badly needed, and until the working classes have realised the importance of the early diagnosis and treatment of catarrhs and tuberculosis and of the removal of the conditions (bad housing, overcrowding, dusty indoor occupations, &c.) which favour these, the arrangement for coördinated measures for the treatment of tuberculosis can have only partial success.

Even when an insured patient is informed by his doctor that he is consumptive, delay in receiving sanatorium benefit is often caused because of the insured patient's unwillingness to go into an institution until his 10*s.* weekly sickness benefit is about to be reduced to 5*s.* Then he accepts a recommendation for sanatorium treatment. In such cases it often happens that hospital treatment is really required.

In the three years of the present war the temptations to neglect symptoms pointing to consumption have increased; as have, also, temptations to conceal the fact of the existence of consumption. Many consumptives have felt impelled to take their part in the national work of the war. A large number of recovered or partially recovered consumptives have been fighting as soldiers. Although not a few of these have been able to withstand the strain of active warfare, the majority unfortunately have broken down, and their lives have been curtailed by the great adventure. In many other instances unrecognised and latent tuberculosis has been brought into activity by the strain of a soldier's life, and the records already show that the war will be responsible for material national increase in tuberculosis, with a consequent increase in the death-rate from this disease.

The dearth of workers and the associated high wages have led to the employment of a large number of semi-invalids in industrial life. The temptation of the high wages has in many instances led both men and women to refuse sanatorium treatment or other systematic treatment.

(2) *The private practitioner.*—The medical attendance of the majority of patients in this country is organised under the conditions of private practice, whether for insured patients or others. It is to the private practitioner that most patients resort, and the early recognition and treatment of disease depends primarily on his skill, on his not being so overworked as to be unable to devote adequate time to the examination of each patient coming under his care, and on his willingness to refer doubtful cases for consultation with the tuberculosis officer. It is not surprising that under war conditions, when nearly every doctor remaining in civilian

practice is overworked, these conditions are not fulfilled. That they have not been fulfilled generally, apart from the war, is shown by evidence derived from many areas.

Belated notifications.—Notification is often delayed when the case has been recognised, and for this, in some areas in which the medical officer of health or tuberculosis officer takes little useful action, if any, after notifications have been received, the Public Health Authority may be held responsible. In previous reports it has been repeatedly urged that notification depends largely for its completeness and promptitude on its being followed by action beneficial to the patient. It has no administrative value *per se*, its utility depends on the action which follows on notification. It is only when the medical officer of health, the tuberculosis officer, and the medical practitioner coöperate in securing the patient's welfare, by improving the conditions under which he lives and works, by measures of cleansing and disinfection, by safeguarding the health of the patient's family, and by a course of institutional treatment when this is indicated, that the possible utility of notification is realised.

At present, cases of tuberculosis which have been under medical care sometimes are not notified until after the death of the patient; other notifications may be received by the medical officer of health within a few weeks or months of death; and the patient may have been ill, with symptoms which pointed to tuberculosis, for a year or two before his case is notified.

The failure to notify is especially great for cases of non-pulmonary tuberculosis; and even when these cases are notified, often no systematic inquiry is made by the medical officer of health or the tuberculosis officer. Systematic family inquiry in such cases not infrequently leads to the discovery of overlooked cases of pulmonary tuberculosis.

Failure to notify may also be due to non-recognition of tuberculosis by the medical practitioner in attendance. This may be due to the medical practitioner being overworked. It is often owing to the tuberculosis officer not being in touch with him, and consequently opportunities for consultation have not been embraced. If greater coöperation were the rule, a much higher proportion of cases would be recognised at the earlier stage when no sputum is available for examination, and the tuberculous character of a large number of cases of "chronic bronchitis" would be recognised.

It is well known that failure to recognise a case of pulmonary tuberculosis until tubercle bacilli are detected in sputum implies that the disease has made considerable progress. In my annual report for 1913-14 I gave figures illustrating the fact that even when there is sputum its examination as a means of diagnosis is utilised to a most variable extent in different towns. Failing this examination, a large number of cases of pulmonary tuberculosis continue for long periods to be treated as bronchitis.

(3) *The tuberculosis officer.*—Few of these officers had been appointed in 1912, but in June, 1915, the number had increased to 238, most of them recently appointed. During the last three years they have been largely replaced by part-time medical officers, and the work has been reduced to a minimum. The experience gained in the short time during which tuberculosis officers have been at work enables a number of points to be stated by way of indicating the lines for future development rather than of criticism of past work. The new service in some areas has been regarded with suspicion by medical practitioners, and little use has been made of the facilities for consultation with the tuberculosis officer at the dispensary or elsewhere. There was an insufficient number of doctors for the new service with adequate experience of the diagnosis and treatment of tuberculosis on modern lines; and some of the less experienced did not secure the confidence and coöperation of private practitioners. This condition, which was unavoidable at first, is only temporary.

The medical officer of health is responsible for the execution of the work under the Board's Tuberculosis Regulations, and his relation to the tuberculosis officer has not always been satisfactory. This has often been due to the tuberculosis officer concerning himself with the treatment of the patient while giving little attention to his hygienic circumstances. It is unnecessary to repeat remarks made in previous annual reports on this point; but one of the first tasks to be undertaken when normal conditions are resumed should be to secure more complete coördination of official tuberculosis work on its therapeutic and hygienic sides.

The importance of examination of home contacts has been emphasised in past reports, but this work has not hitherto been developed to an adequate extent. In some districts so far it has remained entirely in abeyance, and during the war the Board, in order to enable doctors to go on military service, have been compelled to inform public health authorities that this contact work may be intermitted.

In some, especially in smaller, districts the medical officer of health has not carried out his duties completely under the Tuberculosis Regulations, and both from his standpoint and from that of the tuberculosis officer there is need of more complete coöperation than has hitherto been secured.

What is needed is that the organisation of the tuberculosis dispensary shall be in close touch with the special work of the medical officer of health. Both are concerned in home visiting and in supervision of the patient at home, and the visitation should be so arranged as not to be duplicated. The extent to which the tuberculosis officer has succeeded in securing continuous touch with general practitioners has varied greatly in different parts of the country. The early detection of cases of tuberculosis and their successful treatment, with the regular supervision needed in their interests and that of their families, have followed naturally where the collaboration between general practitioner and tuberculosis officer has been secured.

(4) *Sanatoria.*—Pulmonary tuberculosis is the greatest cause of disablement and mortality in adult life. It causes one-third of the total mortality during a large part of the working years of life. It is, furthermore, a disease which is preventable. For these reasons its selection for a special benefit under the National Insurance Act is justified in the interest of national efficiency. Patients, especially workers, suffering from tuberculosis call for treatment. The only question is as to the most efficient methods of treatment. There is universal medical agreement on certain points. Open-air conditions of life, judicious feeding, and regulated rest and exercise or work are necessary to give the best prospect for the patient's recovery or improvement; and his hygienic training has a high value for the patient, while greatly increasing the safety of those about him. Even if the patient is not likely to recover, all will wish him to receive the treatment best directed to improve his health, or failing this, medical assistance and nursing under favourable conditions during his progressive decline. The objects to be aimed at are cure of the patient, or if this is improbable his treatment under conditions conducive to his comfort, and securing others from infection. Broadly speaking, sanatoria are intended to fulfil the first condition, hospitals the second, to the extent to which treatment in a residential institution is required.

These being the objects in view, the question is whether sanatorium treatment, as hitherto developed, has given the best results obtainable in the interest of patients and of the public. The number of beds provided for the treatment of tuberculosis under schemes of public health authorities has doubled since 1911. These are supposed in the main to be sanatorium beds proper. For the following reasons, however, a high proportion of the patients in these beds have been of what is known as the hospital type as defined below.

1st. The largest number of cases coming under the care of general practitioners and of tuberculosis officers are cases of advanced disease or of chronic consumption, in which complete recovery cannot be expected. These cases press for institutional treatment, and it is difficult to refuse it, even though the beds available are more suitable for patients in the earlier stages of disease. The fact that a high proportion of these patients are insured persons claiming sanatorium benefit, increases the difficulty under this heading. Although Insurance Committees are entitled to refuse residential treatment for tuberculous insured persons, and frequently do so on the advice of the tuberculosis officer, there is a natural tendency to give this even when it is scarcely expected that improvement will follow.

2nd. When such patients are received into a sanatorium there is a strong tendency for the medical officer to ask for repeated prolongation of treatment, even when his better judgment would oblige him to certify that permanent benefit is improbable. Not infrequently the same bed is occupied by a single patient for six or nine months who should have been replaced by earlier cases of disease requiring a shorter period of treatment and likely to receive permanent benefit.

Cases of pulmonary tuberculosis requiring treatment in a residential institution may be classified as follows:—

"*Sanatorium cases.*"—Cases in which permanent improvement or recovery can usually be anticipated.

"*Hospital cases.*"—Cases in which only temporary, though possibly prolonged, improvement may be anticipated.

The hospital group will include: (1) Patients who may be expected to recover considerable ability to work; (2) patients admitted for a short term for educational treatment; (3) patients with advanced disease, many of whom improve greatly under institutional treatment; (4) advanced cases requiring continuous medical care and nursing. Cases requiring special observation for the purpose of diagnosis or to determine the best form of continued treatment.

Hospital cases are such in the sense that they are not admitted with a view to the possibility of complete recovery. Probably they will improve under treatment, but recovery of permanent working capacity is not expected.

The duration of treatment required under each of the above headings varies greatly. During the last five years a large number of patients with chronic and advanced phthisis have been treated under conditions especially suitable for sanatorium cases, and the treatment thus given has proved unsatisfactory as regards arrest of disease. If in future the best results are to be obtained from treatment of consumptives in a residential institution, the decision as to the form of treatment in each case must be made solely on the medical needs of the patient. In the decision the hygienic conditions of the patient's home are necessarily considered, as if these are unsatisfactory both the patient and his family suffer. But if, in addition, regard is had to other considerations, and patients are chosen for sanatorium treatment on other than medical grounds, sanatorium treatment is bound to continue to give relatively unsatisfactory results.

(5) *The treatment of chronic and advanced cases of phthisis.*—Under present conditions a high proportion of the patients coming under treatment for tuberculosis will not recover their health permanently or completely. This being so, it is well that treatment of such patients should be considered from the point of view of ordinary medical treatment. Every patient is entitled to treatment, whether his illness be curable or not. A local authority undertaking such treatment may have regard to economy; but on the merits this must not be secured at the expense of the patient. Considered from the standpoint of the patient, the treatment of a considerable proportion of consumptives in residential institutions is most desirable. This is especially true for patients who are acutely ill, or ill with advanced disease, and who cannot be satisfactorily nursed in their own homes.

The question of treatment in residential institutions of patients suffering from phthisis at a probably incurable stage cannot, however, be considered solely from the standpoint of the patient's own interest. Nothing should be done, and nothing need be done, contrary to these interests; but public and personal interests alike point to the desirability of treating the consumptive under conditions which will minimise the possibilities of acquirement of infection by contacts.

For reasons of economy, as well as because of the unwillingness of patients to leave home, a large proportion of the infective lifetime of every consumptive and the whole of the lifetime of some consumptives will necessarily be spent at home. Measures for securing that he shall not be a source of massive infection to others must be reconciled with this economic consideration. Much can be done to secure this in connexion with domiciliary treatment or attendance at a dispensary, when associated with the oversight of the home conditions of patients. But experience has shown that in such cases home supervision is much more efficient when preceded by a short term of stay in a sanatorium or hospital for tuberculosis, in which the patient is trained in the hygienic and general management of his condition, including the proper use of sputum flasks, &c. Unless he is suffering from advanced disease it is advantageous for him also to be trained during this time to sleep in a shelter, preferably one of a type which can afterwards be lent out to the patient to be slept in by him at home, if sufficient open space is available near his home for this purpose. Much of the value of this educational treatment may be lost if the patient is not kept under helpful supervision afterwards.

At a later stage of disease, when the patient is unable to work or is bedridden, the necessity of continuous care and nursing arises. For the majority of patients among the wage-earning classes this can seldom be given satisfactorily at home. The experience of large towns shows that such patients have during the last 20 years been attended to an increasing extent in Poor-law infirmaries and in special institutions; and this treatment and simultaneous segregation of patients, who would otherwise have been nursed under unsatisfactory domiciliary conditions, must be credited as being largely responsible for the decline in the death-rate from tuberculosis which has occurred during the same period, notwithstanding increasing urbanisation of the population with its associated relatively high mortality from tuberculosis.

Happily it is becoming more generally appreciated that no scheme for the control of tuberculosis in an administrative area can be regarded as satisfactory which does not make provision on a considerable scale for the institutional treatment of advanced cases of consumption beyond what in most areas has been so far provided.

Housing in relation to the prevention and treatment of tuberculosis.—Not infrequently it is assumed that in the prevention of tuberculosis improved housing is an alternative policy to the provision of sanatoria and hospitals for consumption. It is also suggested that sanatoria and hospitals may in a large measure be dispensed with in the treatment of consumptive patients. The two points need to be considered together, inasmuch as measures for the treatment and prevention of tuberculosis are to a large extent identical. An essential part in the prevention of the spread of tuberculosis consists in housing patients under conditions in which they will not spread infection. When a separate bedroom is not already available this may be done by provision of an additional bedroom at home or by removing the patient to an institution. In practice both plans are desirable, according to circumstances.

Institutional treatment is needed when special sanatorium treatment is required or when the patient needs skilled medical attendance and nursing which cannot be obtained at his home. Satisfactory treatment is extremely difficult to organise at home both for early and for advanced cases of consumption, and although much may be done to improve home conditions, this difficulty will, in large measure, continue to apply for a large proportion of the total population.

Statements to the opposite effect are made without adequate consideration of the general facts as to national housing. At the last Census 3,139,472 persons, or 8·7 per cent. of the total population of England and Wales, were living in dwellings containing less than one room for every two persons, there being an excess of 780,776 persons in these dwellings on this basis. Of the total population 2,580,814, or 7·1 per cent., were living in one or two-roomed dwellings, and 4,429,119, or 12·3 per cent. of the total population, in three-roomed dwellings. Under these circumstances the impracticability of providing adequate and still more of providing separate bedroom accommodation for consumptive patients is evident. Satisfactory family life even for a healthy family is difficult to maintain under the above conditions. The conditions become dangerous when a sick person has also to be housed, intimate contact with whom is likely to infect others. The problem, in large measure, has been solved for the acute infectious diseases by establishing isolation hospitals; and although these hospitals may not have completely fulfilled expectation in the amount of reduction of infection secured, they have done great work in this direction, and have made themselves indispensable under modern social and industrial conditions.

In the acute infectious diseases the onset of secondary cases occurs after a few days' incubation; in pulmonary tuberculosis there may be a latent period stretching over years, and cause and effect may be difficult or impossible to connect. It is, however, agreed that such infection occurs, that some persons, and especially the young, more easily fall victims, and that even the more resistant may fall ill from tuberculosis when exposure to infection has been protracted or when, otherwise, the infection has been in massive doses.

The bearing of these facts on the institutional treatment of consumptives is obvious. They cannot be institutionally treated continuously, even if they were willing, and there is no need for residential institutional treatment during a large part of their sick life, assuming that they follow out the simple instructions in which they have been previously educated, preferably in a residential institution.

But sanatorium treatment and, even more important, hospital treatment of consumptives on the lines indicated in previous paragraphs must form an essential part of a satisfactory programme for the treatment and control of tuberculosis.

The Local Government Board's grants to local authorities for the institutional treatment of tuberculosis have not yet reached a quarter of a million of money in any one year. If to this be added the sum spent on the institutional treatment of insured consumptives, after deducting the contributions of insured persons and employers, the total cost borne by Government funds is certainly less than half a million sterling per annum. This is apart from local expenditure.

Housing and institutional treatment for tuberculosis cannot properly be regarded as alternatives. They are necessary complements to each other, and there must be increased expenditure in both directions. Housing is a problem in two divisions: For the healthy and for the sick. Special housing in institutions is needed for the sick when the care which their condition requires is not available in the home of the patient. This is true, whether the patient will be cured by the institutional treatment or not. But it is the duty of administrators so to arrange the conditions of admissions to, and continued treatment in, institutions that the provision will be used in the most economical and efficient manner possible, consistent with the welfare of the patients concerned.

STERILISATION BY DAKIN'S SOLUTION AND THE OCCURRENCE OF SECONDARY HÆMORRHAGE.

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(*From a Surgical Observation Hut in France.*)

SINCE the treatment of septic wounds is of prime importance and great improvements are being effected in it, no excuse is necessary for reinvestigation by a novel method of the relative potency of certain antiseptics which are fashionable at the present time. An impartial judgment from time to time of the value of the methods in use and of others proposed proves of direct benefit to the wounded under treatment. Such inquiries are indeed required to safeguard the patient against methods, which although new or modifications of older procedures, are not based on adequate trials, and against methods which the wounded have seen described in the lay press and feel aggrieved at not receiving.

Object and Nature of Present Inquiry.

The ideal antiseptic has yet to be found, all those in use possessing certain disadvantages. The present inquiry had its origin in the question of whether or not secondary hæmorrhage is more frequent under some forms of treatment at present in vogue than in others, suspicion having been aroused that the walls of healthy vessels lying exposed in wounds might be corroded by the antiseptic solution employed. The histological investigation of vessels from which secondary hæmorrhage had occurred has not lent support to this suspicion, as, without exception, they were found to have suffered previous damage. In a few cases the damage was purely physical, and in one instance this physical injury was associated with an aseptic thrombosis. In most cases septic thrombosis was present. In yet others the bleeding point was surrounded by granulations, showing that corrosion was not the cause of the hæmorrhage. In another paper I have discussed the frequency of thrombosis in association with infected wounds.[1]

Resort was had to experiment with chloramine, Dakin's solution, Lorrain Smith's solution (eusol), and flavine. For purposes of comparison parallel experiments were made with iodine and mercury perchloride.

The method adopted consisted in the immersion of living tadpoles in various dilutions of the substances to be tested, one advantage thus gained being the elimination of the question of soaking the skin with water, such as occurs when watery fluids are applied to wounds. The experiments were performed at a temperature of 24°–26° C. The following observations were made.

[1] British Journal of Surgery, April, 1917.

1. By snipping off the tail, some distance from the anus, and dropping it into broth, it was first ascertained that the skin of the tails of the tadpoles yielded a heavy growth of Gram-positive and negative organisms—bacilli, streptococci, and also coliform bacilli—and were therefore suitable for this investigation.
2. The lethal concentrations of the several solutions for the tadpole were then determined, and the condition of the tails as regards sterility ascertained immediately after death, the nature of the lethal action being left out of consideration as immaterial.
3. When a minimum dilution, sterilising the skin of the tail at death had been found, a new series of experiments was made to ascertain if sterilisation could be effected in non-lethal solutions.
4. Thereafter the minimum time required to sterilise the tails was ascertained, and then was compared with the time required to cause the death of the animal.
5. Finally, the corroding or digestive action of the several solutions on the abdominal wall was noted.

After the preceding necessary preliminary experiments had been carried out the whole series of observations could be combined simultaneously in a long series of beakers, each containing one or more tadpoles immersed in increasing dilutions of the substance or substances. The accompanying tables give the results of such series of experiments.

TABLE I.—*Dakin's Solution (Diluted to give the Concentration of Hypochlorite shown in Column 1).*

Dilution of hypochlorite.	Average time required to cause death.	Condition of skin of tail at death.	Minimum time required to sterilise skin of tail.	Time required for abdominal wall to rupture.
1 : 1,000	3 min.	Sterile.	3 min.	35 min.
1 : 2,000	6 ,,	,,	3 ,,	3 hrs.
1 : 4,000	12 ,,	,,	5 ,,	4 ,,
1 : 10,000	18 ,,	,,	5 ,,	44 ,,
1 : 25,000	30 ,,	,,	10 ,,	Action absent.
1 : 50,000	35 ,,	,,	16 ,,	,,
1 : 100,000	60 ,,	,,	30 ,,	,,
1 : 500,000	Alive after 24 hrs.	Sterile after 4 hrs.	—	,,
1 : 1,000,000	,,	Not sterile after 24 hrs.	—	,,

TABLE II.—*Eusol (Diluted).*

Dilution of hypochlorite.	Average time required to cause death.	Condition of skin of tail at death.	Maximum time required to sterilise skin of tail.	Time required for abdominal wall to rupture.
1 : 2,000	5 min.	Sterile.	2 min.	5 hours.
1 : 4,000	6 ,,	,,	3 ,,	Action absent
1 : 10,000	8 ,,	,,	4 ,,	,,
1 : 25,000	16 ,,	,,	5 ,,	,,
1 : 50,000	35 ,,	,,	12 ,,	,,
1 : 100,000	60 ,,	,,	30 ,,	,,
1 : 500,000	Alive after 24 hrs.	,,	—	,,
1 : 1,000,000	,,	Not sterile after 24 hrs.	—	,,

TABLE III.—*Chloramine.*

Dilution of antiseptic.	Time required to cause death.	Condition of skin of tail at time of death	Minimum time required to sterilise skin of tail.	Time required for abdominal wall to rupture.
1 : 50	18 min.	Sterile.	3 min.	No appreciable solvent action.
1 : 100	25 ,,	,,	6 ,,	,,
1 : 200	35 ,,	,,	10 ,,	,,
1 : 400	45 ,,	,,	15 ,,	,,
1 : 1,000	1¼ hrs.	,,	25 ,,	,,
1 : 2,000	2 ,,	,,	30 ,,	,,
1 : 4,000	2¾ ,,	,,	1½ hrs.	,,
1 : 10,000	5¼ ,,	,,	1¾ ,,	,,
1 : 100,000	Alive after 24 hrs.	Not sterile.	Not sterilised.	,,
1 : 500,000	,,	,,	,,	,,
1 : 1,000,000	,,	,,	,,	,,

TABLE IV.—*Flavine.*

Dilution of antiseptic.	Average time required to cause death.	Condition of skin of tail at time of death.	Minimum time required to sterilise skin of tail.	Time required for abdominal wall to rupture.
1 : 1,000	1 hr.	Sterile.	½ hr.	No solvent action.
1 : 2,000	2 hrs.	Not sterile.	Not sterilised.	,,
1 : 4,000	3 ,,	,,	,,	,,
1 : 8,000	8 ,,	,,	,,	,,
1 : 16,000	16 ,,	,,	,,	,,
1 : 32,000	Alive after 24 hrs.	Not sterile after 24 hrs.	,,	,,
1 : 50,000	,,	,,	,,	,,

TABLE V.—*Iodine.*

Dilution of antiseptic.	Average time required to cause death.	Condition of skin of tail at death.	Minimum time required to sterilise skin of tail.	Time required for abdominal wall to rupture.
1 : 10,000	5 min.	Sterile.	3 min.	No solvent action.
1 : 50,000	20 ,,	,,	20 ,,	,,
1 : 100,000	30 ,,	Not sterile at death.	—	,,
1 : 250,000	1 hr. 50 min.	,,	—	,,
1 : 500,000	2½ hrs.	,,	—	,,
1 : 1,000,000	Alive after 24 hrs.	,,	—	,,

TABLE VI.—*Mercuric Chloride.*

Dilution of antiseptic.	Average time required to cause death.	Condition of skin of tail at time of death.	Maximum time required to sterilise skin of tail.	Time required for abdominal wall to rupture.
1 : 2,500	11 min.	Sterile.	4 min.	No solvent action.
1 : 5,000	13 ,,	,,	4 ,,	,,
1 : 10,000	30 ,,	,,	15 ,,	,,
1 : 100,000	1½ hrs.	,,	45 ,,	,,
1 : 500,000	2½ ,,	,,	2 hr.	,,
1 : 1,000,000	4 ,,	,,	More than 2 hrs.	,,
1 : 5,000,000	5 ,,	Not sterile.	—	,,

Results of Experiments.

A comparison of the tables shows that Dakin's and Lorrain Smith's solutions (Tables I. and II.) are practically parallel both in their lethal effects and in their power to sterilise living tissue, the latter action taking place in, roughly, half the time required to produce death, but that the solutions differ in their power to digest dead tissue. Although in the table eusol is shown as digesting the abdominal wall in five hours, it should be noted that the effect was in no way comparable to that obtained with the highest dilution of Dakin's solution having this action. In higher concentrations of Dakin's solution the tadpole, after dying, was speedily reduced to a little heap of sand representing the intestinal contents, but with eusol this result was not obtained.

Chloramine (Table III.), by comparison with Dakin's solution and eusol, is shown to be relatively less toxic to the animal and the minimum time required to sterilise the tail is a much smaller fraction of the time required to kill the animal, being roughly ¼ contrasted with a ⅛ for the former substances. These three preparations have, therefore, the common property that lethal action and bactericidal effects exercised upon the surface can be separated.

Flavine (Table IV.), or to be quite correct the two samples examined, has not the same power to sterilise the skin of the tadpole's tail. The figures given in the table were the best obtained in four series, sterilisation having been obtained only once at death by a dilution of 1 in 2000.

Iodine (Table V.) and mercury perchloride have only been tested for the purposes of control, because, so far as I am aware, the method employed has not before been applied to a comparison of antiseptic power. For iodine it may be noted that it is efficient—a point of interest—because it is so extensively employed as an application to the skin of the wounded, as well as in other circumstances. Mercury perchloride calls for no comment beyond a reference to the figures (Table VI.) as ascertained. The only point of interest in the present connexion is that with these substances lethal action and bactericidal power coincide in the higher dilutions. This is also the case for the strongest concentration of flavine, bactericidal power and lethal action not being separable.

Limitation of Corroding Action.

As the question of the corroding action of Dakin's solution on the walls of healthy vessels has been raised in connexion with secondary hæmorrhage, and is one of importance, a series of experiments have been made on this subject. It is well to show how this deleterious action can probably be excluded by the present observations.

The anterior abdominal wall of the tadpole is a delicate membrane formed mainly of two layers of cubical cells. Normally the intestines do not show through the anterior abdominal wall, whether in the living or newly dead tadpole; but in the event of a corroding or digestive action, the wall thins and they soon begin to be visible. Finally, rupture of the abdominal wall is indicated with great exactness by the intestines being set free and shooting out, somewhat like a watch-spring released. A tadpole having been killed by immersion in water in which a trace of chloroform had been shaken up, was put into a beaker of hypochlorite solution simultaneously with a live tadpole of the same size, and the time required for digestion of the abdominal wall noted in the two cases. Results such as the following were obtained:—

Dakin's Solution.

Dilution of hypochlorite.	Time for abdominal wall to rupture.	
	Tadpole immersed when dead.	Tadpole immersed when living.
1 : 1000	30 minutes.	40 minutes.
1 : 2000	2½ hours.	3 hours.
1 : 4000	3 hours 40 minutes.	3 hours 55 minutes.

In such an experiment the action of the solution on the abdominal wall while the circulation remains intact for some time is contrasted with its action on the same delicate and still living membrane after the services of the circulation have been impaired or entirely lost. The differences between the time required for the abdominal wall to rupture in the living and the dead animal respectively are larger than the interval required to produce death, as shown in column 2 of Table I.[2]; and hence the vitality retained by the skin immediately after death of the animal offers resistance to the digesting action of the fluid. Moreover, if living tadpoles be compared with those that have been kept in water for an hour after death, the difference is greatly increased, showing that the more vitality is impaired, the more readily the tissue is attacked, and probably that dead tissue is immediately attacked. Therefore the activity of the circulation and the retention of local vitality place limitations on the corroding action of Dakin's solution, while on the other hand the absence of a circulation and reduced vitality promote this action.

It would appear from the above table as if the local action of Dakin's solution was held in check by an efficient circulation either by providing protein-containing fluid or by carrying off and rendering harmless the hypochlorites as they approach living tissues without entering into combination with them—i.e., killing them. It seems reasonable to infer from experiments with such a delicate membrane that equilibrium between the two processes is well established within an extremely narrow zone of tissue—in this case two layers of cubical epithelial cells—and is an expression of the limited extent to which Dakin's solution, owing to its great lability or chemical instability, can penetrate or injure living tissue in the presence of an efficient circulation.

[2] Death occurred, for 1 : 1000 in 3 and for 1 : 2000 in 6 minutes; for 1 : 4000 in 12 minutes. The differences are therefore 7 and 23 minutes respectively for the first two dilutions. The approximation of the times for the living and the dead tadpoles shown in the above table is characteristic of all reactions taking place in the extremes of dilutions at which they occur at all, and may be left out of the argument, except in so far as the table shows on the whole, that, if action on living tissue does not commence during complete vitality, still an impairment of vitality by the solution itself cannot be excluded, and that the solvent action is probably being attempted all the time, and becomes efficacious immediately whenever the impairment, short of death, becomes sufficient. Further observations are in progress on the action of the hypochlorites on the web of the frog's foot both when the circulation is active and arrested.

This lability has been urged as a disadvantage, and certainly the necessity for repeatedly renewing the supply of the solution is a practical inconvenience; but the very lability of the hypochlorites is probably the essence of their efficacy in wound treatment, as contrasted with antiseptics of known stability; and it still remains to be proved that the application of hypochlorites through other than watery media is equally efficacious, as in their application by means of the oily media now undergoing trial, and which it is hoped may act as reservoirs parting slowly with the active ingredient and therefore not requiring frequent renewal.

The other substances as tested are devoid of this solvent action on dead tissue, which, unless of the highly delicate and easily balanced nature characteristic of Dakin's solution, may readily be dangerous as in the case of the ferments. The abdominal wall of a living mouse is rapidly digested by 1 c.c. of a 1 per cent. suspension of Fairchild trypsin, so that the intestines lie free from the cavity in a quarter of an hour, whereas 30 times this quantity of trypsin is borne without any evident effect when injected intravenously.

Secondary Hæmorrhage.

I have heard different opinions expressed as to the manner of action of Dakin's solution. The foregoing observations seem to make it clear that in a septic wound it acts both as an antiseptic and as a cleansing agent or remover of dead tissue liable to serve as a nidus for micro-organisms. The latter are caught, as it were, between two fires, the antiseptic action of the hypochlorites, on the one hand, and the natural defences of the living tissues with which they are brought in direct contact on the other. It may, of course, be a disadvantage to remove, say, all healthy fibrinous exudate from the surface of the wound, but this is more than counterbalanced by the removal of all dead tissue. The removal of dead tissue is extremely well exhibited in a case brought to my notice by Captain F. L. A. Greaves, R.A.M.C. The anastomotica magna had been ligatured in an open wound and the visible free end, under the action of Dakin's solution, began to show signs of disappearing, so that the occurrence of secondary hæmorrhage was feared. Nothing of the kind happened, however, the erosion stopping just before the point of ligature was reached.

Were the erosion of sound vessels the usual cause of secondary hæmorrhage this accident would occur in practically all cases. The evidence adduced above to the effect that erosion of the delicate epithelial membrane covering the abdomen of the tadpole is resisted by its local vitality may legitimately be taken as evidence that the same holds for man in view of the experience gained in the treatment of wounds. Part of the frequency of secondary hæmorrhage may be due, not to the action of the solution, but only to its improper application, say by pressure of the point of the Carrel's instillation-tube badly applied, and thus leading to injury. Where, however, secondary hæmorrhages are common or gross, or obvious septic thrombosis can be excluded, the accident should be regarded rather as an indication that the surgeon to-day can preserve wounded limbs damaged to such a degree that earlier in the war either the wounded man died or the limb was amputated. Even the most careful cleansing now habitually carried out may fail to detect small injured or infected vessels with or without thrombosis, from which the bleeding apparently almost always arises. The position in regard to secondary hæmorrhage appears to me to be very similar to that attending the occurrence of local tetanus or the more familiar post-diphtheritic paralysis. Both the latter accidents are met with as a result of successful attempts in saving life.

During the war much has had to be learned as to dressing or treating septic wounds as contrasted with those of intentional surgery, and although the goal has not yet been reached great progress has been made so far as one who is not a surgeon, although constantly observing wounds at a general hospital and a surgical observation hut, can judge.

Victor Hugo, writing of events supposed to have taken place in 1832, tells us: "The dressings were complicated and difficult ..... and it was not without difficulty that chloruretted lotions ..... reached the end of the gangrene" ("Les Misérables"); and perhaps had the beneficial eras of antiseptic and aseptic surgery not for the time banished such wounds as Victor Hugo alludes to, we should have been better prepared for the proper application of the hypochlorites, or have already obtained improvements on them.

(Continued at foot of next column.)

THE RETRACTION OF BLOOD-CLOTS,

WITH TWO METHODS FOR SECURING A LARGE YIELD OF SERUM.

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I. THE EXTERNAL FACTORS.

IN spite of the large amount of work that has been directed to the study of the coagulation of the blood, comparatively little attention has been attracted to what is in reality a part of the process—namely, the retraction of the clot by which the serum is squeezed out. The question is of much theoretical interest, and now that so much use is made of serum in diagnosis and treatment, of some practical importance. In this and a subsequent article I propose to discuss the theory of the process, and to describe two methods by which a very full crop of serum may easily be obtained.

The Process of Retraction of the Clot.

The main phenomena are well known.

Blood when drawn from the living body, and collected in a non-living vessel, clots after a longer or shorter time. At first the clot is a uniform, soft, mass. After a period which varies from a few minutes to several hours, it usually begins to contract, and in doing so squeezes out from itself a larger or smaller amount of serum, mixed, in most cases, with red corpuscles and leucocytes. This serum usually makes its appearance in two situations—between the clot and the sides of the vessel, and on the surface of the clot—where at first a few small drops of serum appear, which, by their coalescence, form ultimately one or more large drops, or a complete layer of fluid. The clot is heavier than the serum, and tends to sink, so that when the process is completed it forms a dark purplish mass, having approximately the shape of the containing vessel, lying at the bottom of a greater or smaller amount of serum.

When clotting takes place a fine network of filaments of fibrin is formed, enclosing within its meshes serum, red corpuscles, and leucocytes. This is the first stage of the process, or coagulation. In the second stage, or retraction, each filament tends to contract, and, when it can do so successfully, the serum and some of the red corpuscles are squeezed out, and a firm mass of fibrin containing a comparatively small number of red corpuscles is left. The leucocytes, I may add, almost certainly make their way through the clot by their own active movements: the serum and red corpuscles are, of course, squeezed out mechanically.

A little consideration will show that the effects of this contraction of the fibrin filaments will differ fundamentally in the centre and at the periphery of the clot. If we consider a point in the centre of the clot (say a red corpuscle surrounded by a network of fibrin) we shall see that it is exposed to equal and opposite tensions in all directions, and as a result there is a general raising of the pressure in the mass, but no tendency for the movement of the serum or of the corpuscles in any one direction rather than in another; just as a sponge lying at the bottom of the ocean and permeated with water under high pressure will be neither compressed nor expanded. Retraction, therefore, must commence at the periphery—either at the sides of the vessel or at the surface of the clot. Here the conditions are quite different. Consider the case of a point lying in contact with the wall of the vessel. It also will be pulled on by fibrin filaments, but not in all directions. Those filaments which lie parallel to the surface in their contraction will have exactly the same effect as would be exerted by a stretched membrane surrounding the clot, tending to compress it and make it smaller. Those which are not parallel to the surface are either vertical thereto, in which case they tend to pull the clot away from the containing vessel, or at an angle, in which case they can be divided into their horizontal and vertical components, one tending to make the clot contract, the other pulling it away from the glass. At first these tensions are balanced by the adhesion of the

(Continued from preceding column.)

It would have been impossible for me to perform the numerous simple but tedious experiments, of which examples are given, without the able assistance of Private T. C. Reynolds, R.A.M.C. In conclusion, I have to thank Colonel H. E. Cree, A.M.S., for granting me facilities for carrying out this investigation.

clot to the wall of the vessel, and if this is sufficiently firm retraction will never take place; if not, the clot first detaches itself from the surface, and then continues to contract. At the upper surface there is no such counterbalancing pull, so that it is more easy for contraction to take place; hence we see, as a rule, that serum appears first on the free surface, especially in large clots. As a rule, however, not much fluid appears in this situation. It is noteworthy, also, that there is usually a decided difference between the serum which appears on the top and at the sides of the clot, that in the former situation being turbid from red corpuscles, that in the latter being quite clear. The reason for this difference is obvious. When the blood is drawn the corpuscles immediately begin to settle, and by the time clotting has taken place (unless this is very unusually rapid or unless the corpuscles sink with unusual slowness) there is a layer of corpuscle-free plasma on the surface, and when this clots it interposes a barrier which allows the escape of serum, but not of corpuscles.

Under certain circumstances (rapid settling of the corpuscles or slow coagulation of the blood) a thick layer of plasma may be formed before coagulation occurs. In this case the clot that forms may be so firm that not even serum is squeezed out. But here, I think, other factors may come in.

A similar process takes place in the walls of the lower part of the clot as retraction proceeds. The fluid that is squeezed out at the beginning of the process contains very many corpuscles, but as it continues these become less and less numerous, until at last only pure serum escapes. This is obvious on careful examination, and I have corroborated it by actual count. Here it is easy to see that the corpuscles which have been entangled near the surface will escape very easily, and in doing so leave a relatively firm mesh impassable to corpuscles, though permeable to serum. After a time all the corpuscles which have passages open to them will have escaped and the sides of the clot will become to all intents and purposes similar to the non-corpuscular layer at the top of the clot. That this is the case may be shown by cutting a section of a clot in which complete retraction has taken place.

Consideration of External Factors.

I will now consider the factors which cause a difference in the retraction of different clots—why some retract quickly and give an abundant crop of serum, and some do so slowly, giving a smaller crop, or fail to retract at all.

Two sets of factors have to be considered. The first, which I shall call the internal factors, are those which differ in different specimens of blood. The second, the external factors, which I shall consider are the size and shape of the containing vessel, the nature of its walls, temperature, and gravity. These are the main factors which we can alter more or less at our disposal, and in doing so cause great alterations in the process. This paper deals with these external causes alone.

(1) *The Shape and Size of the Vessel.*

Reverting to our idea that the contraction takes place at the surface of the clot, which behaves as if it were enclosed in a slightly stretched elastic membrane, theory shows what experiment clearly proves, that these factors are of prime importance. This has not, I think, been previously recognised. In dealing with ordinary surface-tension, such as is always present at the surface of a liquid, it is a well-known law, based on simple mathematical considerations, that in the case of curved surfaces the smaller the sphere of which they form part the greater the tension, the tension per unit being constant. Thus if two soap-bubbles of different size are connected the one with the other by means of an open tube, the smaller will continue to contract (blowing out the larger one as it does so) until it forms a flat diaphragm across the tube.

The force tending to draw the clot away from the surface is largest in small tubes, and gets progressively less in larger tubes, reaching its minimum in a vessel with flat walls, in which the retraction commences and is most marked at the angles.

In these experiments I have used human blood drawn directly from the veins. This has been collected in a tube lined with paraffin, in which it will keep unclotted for a sufficiently long time for the experiments to be made. Measurements, where necessary, are made with paraffined pipettes. The following may be quoted as a proof of the effect of the size of the tube on the process. The same specimen of blood was divided into eight tubes, two capillaries having an internal diameter of a little more than 1 millimetre, two narrow tubes having an internal diameter of about 4 mm., two "Wassermann" tubes with an internal diameter of 9 mm., and two test-tubes of 17 mm. The results were as follows:—

Diam. of tube.	½ hour.	1 hour.	2 hours.	4 hours.	24 hours.	Yield of serum.
17 mm.	No retraction.	No retraction, a little serum on the top.	No change.	No change.	No change.	0% except for a little at the top.
,,	,,	,,	,,	,,	,,	
9 mm.	No retraction.	No retraction.	No retraction, a little serum on the top.	Slight retraction	Marked retraction	21·5%
,,	,,	,,	,,	Nil.	Slight retraction	6·3%
4 mm.	No retraction	Retraction just obvious.	Much	Much.	Much.	30·7%
,,	,,	No retraction	,,	,,	,,	29·2%
Capillary, rather more than 1 mm.	Abundant retraction	Abundant retraction	No obvious alteration.	No obvious alteration.	No obvious alteration.	56·0%
,,	,,	,,	,,	,,	,,	59·6%

Room temperature throughout.

As a result of a considerable number of observations I can make the following statements with regard to specimens kept at the room temperature. 1. Blood collected in capillary tubes always contracts completely, yielding the full theoretical amount of serum. In most cases it commences in less than 15 minutes and is complete, or nearly so, in another 15. 2. In the tubes such as I use for Wright's collecting capsules, which have an internal diameter of 3 4 mm., retraction almost always takes place and is usually complete, or nearly so, but it is occasionally only partial and is always decidedly slower than in capillaries. 3. In Wassermann tubes retraction is the rule, but there are occasional exceptions. It is much slower, and not as a rule complete in less than 12 24 hours. 4. In large test-tubes it is very frequently absent, and is always slow and often incomplete.

The practical application of this is that where a good crop of serum is required the blood should always be collected in tubes as small as is convenient.

(2) *Influence of the Nature of the Walls of the Vessel.*

If this is of such a nature that the fibrin filaments can attach themselves firmly thereto, much of the force of their contraction (which I believe can only act for a limited time) may be expended in tearing the clot from the wall, with the result that but little serum will be squeezed out. In dealing with glass vessels of ordinary cleanliness I do not find this is a factor of any great importance, and I have never yet found any medium which is sufficient to prevent the retraction of the clot from the walls of small tubes, provided the proper temperature is employed. In general the cleaner and newer the vessel the easier and quicker is the retraction; it takes place best of all in tubes that have recently been drawn out, and in a tube that has been dry sterilised whilst not quite clean it may be appreciably delayed.

In the course of a search for some material from which the clot would not detach itself at all I have had the best results with paraffin. A tube lined with hard paraffin and allowed to set will often show no trace of serum long after complete separation has occurred in an ordinary tube. I shall show subsequently how this fact is used in procuring a large and quick yield of serum.

I do not think a clot formed in a living vein retracts from the walls. I have never seen any unmistakable indication of this in sections of thrombosed veins, and have not found it to occur in some observations I made in vessels in amputated limbs. When separation of the clot, with resultant embolism takes place, I believe it is always due to a partial

liquefaction of the clot by the trypsin given off by the polynuclear leucocytes—or, of course, it may be separated by violence.

(3) *Effect of Gravity.*

If a freshly-formed clot be suspended in air, the process of expression is very rapid, the contraction of the fibrin being assisted by the weight of the serum, which tends to run out, just as water would do from a suspended sponge. But if the clot remains in the serum this assistance from gravity is very much less, and at first sight it may not be apparent how it is brought about at all, for the serum within and that outside the clot have, of course, exactly the same specific gravity, and that within will have no tendency whatever to drain away.

Two cases may be considered. In the first, which usually occurs in comparatively narrow test-tubes, the clot remains adherent by a "rim of attachment" at its upper angle of contact with the wall of the tube; retraction always begins at some point on the side, and extends until every point except this rim of attachment has detached itself from the glass. If we study such a clot (Fig. 1) we shall see that it has a wide top, a comparatively narrow neck, and a wider base, which is often almost or quite as wide as the tube, and may in some cases be almost spherical. The shape is due to the action of gravity on a soft mass, originally cylindrical, which is lifting itself up by the contraction of its surface membrane. The narrow neck is, of course, due to the stretching by the weight below, whilst the rounded shape of the base is due to the fact that all stretched membranes tend to assume a spherical form.

FIG. 1.

It surprises many to whom this phenomenon is first pointed out to realise that the very delicate rim of attachment should support the whole weight of the clot, but a little consideration will show that this is not really remarkable. When the clot is first formed it has, of course, the specific gravity of the whole blood (about 1056). As soon as retraction commences it begins to rise; some of the serum, which is lighter (sp. gr. 1030), escapes. At first the pull on the rim of attachment is practically nil. As the clot shrinks its specific gravity gradually rises, ultimately reaching something just under 1100. At this point it will only weigh, whilst in the serum, as much as if it has a specific gravity of 1100 − 1030, or 70. The force of gravity which helps to squeeze out the serum is never more than would be exerted on a cylinder of this specific gravity, suspended in air. It does help the process somewhat, as is shown by the narrow neck of the clot, from which the serum must be pretty thoroughly expressed. The slight weight of the clot whilst suspended in serum may be understood when we realise that the contraction of the fibrin filaments will be quite sufficient to lift a large clot bodily from the bottom of the tube.

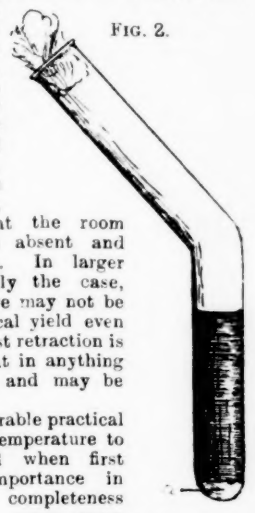
If we cautiously insert a narrow pipette, doing as little harm to the rim of attachment as possible, and pipette off the serum, the clot will regain its full weight, so that the upper part will be forcibly stretched, and there will, in addition, be the direct action of gravity on the serum in the clot. The most efficient method by which we can assure gravity is by pipetting or drawing off the serum as fast as it is formed.

In the second case, which usually occurs in large vessels, the rim of attachment will not hold, and the clot sinks to the bottom. This is because the length of the rim increases only proportionately to the diameter of the vessel, whereas the weight of the clot rises in proportion to its cube. Here gravity helps, in that the upper part of the clot presses on the lower, and tends to press out the serum; but the conditions are much less favourable, for, firstly, the clot may be pressed against the walls of the vessels, and the serum be thus prevented mechanically from escaping; and, secondly, the compressing force exerted by the upper part of the clot tends to counteract the contraction of the lower part. Of course, if the clot does not separate itself from the walls of the vessel at all it may be necessary to separate it mechanically by means of a sterile wire, but where it can be avoided it is best not to do so; it is much better to leave the clot attached at the upper rim as long as possible and to pipette the serum off as soon as it appears.

(4) *Effect of Temperature.*

This is of the highest importance, and in general terms it may be stated that the nearer the temperature of the vessel to that of the body the quicker and more complete will be the retraction. I have stated that every specimen of blood that I have ever seen has retracted at room temperature when kept in tubes about 3–4 mm. in diameter, though the retraction is not always complete and is usually slow. Retraction at incubator temperature is always rapid and complete. In tubes about 1 cm. in diameter retraction always takes place in the incubator, and is usually complete; at the room temperature it is sometimes absent and usually slow and incomplete. In larger tubes this is very frequently the case, and even in the incubator there may not be anything like the full theoretical yield even after 12 hours. In the ice-chest retraction is usually absent or but very slight in anything larger than a capillary tube, and may be incomplete in these.

FIG. 2.



In Figs. 2, 3, 4, and 5, *a* represents the paraffined surface.

Another point of very considerable practical importance is this: it is the temperature to which the blood is exposed when first drawn that is of chief importance in determining the rate and completeness of the retraction, and in some cases the effect of exposure to an unsuitable temperature at this period cannot be afterwards undone.

One or two examples must be quoted:—

(1) A specimen of blood in a paraffined tube was divided into two Wassermann tubes. One was placed at once in ice-water, kept there for half an hour, and subsequently kept at the room temperature. It showed no retraction in 1½ hours, and next day the percentage of serum present was 13. In the control tube, which was kept at room temperature throughout, retraction was well marked in a quarter of an hour and in 48 hours the crop of serum was 34·6 per cent.

(2) In a similar experiment four tubes were used, two of which were incubated 1 hour, and then kept at the room temperature. These gave 56·6 per cent. and 50 per cent. of serum. (The blood was from a slightly anæmic person.) Two other tubes were kept at the room temperature throughout. They gave 41·6 per cent. and 34·6 per cent. respectively.

(3) In this experiment two Wassermann tubes of blood were incubated from the first, two kept at room temperature for 1 hour, then incubated, and two kept on ice for 1 hour, and then also incubated. The following table shows the rapidity and completeness of the retraction:—

—	½ hour.*	1 hour.	2 hours.	Yield of serum after 3 hours.
Incubated from the first.	Retraction nearly complete.	Apparently complete.	No change.	53·3 %
" "	"	"	"	56·6 %
Room temperature 1 hour, then incubated.	No retraction.	No retraction.	Much retraction.	51·7 %
" "	"	"	"	51·7 %
Ice-water, 1 hour, then incubated.	No retraction.	No retraction.	No retraction.	10·0 %
" "	"	"	Marked retraction.	18·1 %

* Not counting the first hour.

Hence when we wish to collect as much serum as possible we ought to collect our blood in warmed tubes and incubate it as soon as possible. After an hour or two it may be kept at the room temperature if desired, but the ice-chest should be avoided until complete retraction has taken place. I should add that this fact was first pointed out to me by Dr. Cartwright Wood.

I will conclude by giving two methods by which a very full crop of serum can be obtained in a very simple manner, and one which does away with any chance of contamination or the addition of foreign substances. They are based on the power that a clot has of adhering with some tenacity to a paraffined surface.

Description of Methods.

1. Bend a test-tube (as long as possible) about the middle to an angle of 135° or thereabouts. After sterilising it pour in a small amount of melted paraffin, heat it, and keep the tube upright until it is cold. When set the paraffin will form a layer at the bottom of the tube; it is an advantage to let it run along the side of the tube away from which the upper limb is turned (that which is lower when the tube is placed on its side, as in Fig. 3). A tube thus prepared will,

FIG. 3.

of course, keep indefinitely. To use it, fill with blood short of the angle and keep it upright until coagulation has taken place—of course in the incubator. (Fig. 2.) Then put it down on its side, slightly tilted so that the serum may drain down into the angle. With a tube of the ordinary test-tube diameter and containing 8–10 c.c. of blood retraction will usually be complete in two hours or less, and it will be seen that the clot has stuck to the paraffined surface of the tube, whilst it has retracted elsewhere, and has allowed the serum to collect in the angle of the tube. (Fig. 3.)

Workers may like to compare this method with that described by Dr. Gardner in THE LANCET of July 14th. Beside the advantage that the tubes can be kept ready for use, I find it more efficient. Thus in one experiment in which a sample of blood was divided between one of my tubes and one of Dr. Gardner's, and the crop of serum examined after two hours' incubation, I got the following results:—

In the paraffined tube. Total volume of blood, 7·7 c.c. Volume of serum, 3·3 c.c. Amount, 42·9 per cent.

In the agar tube. Total volume of blood, 12·6 c.c. Amount of serum, 3·1 c.c., or 23·8 per cent.

The experiment was a little unfair in that the paraffined tube contained rather less blood, so that a relatively larger crop might have been expected. Retraction in the agar tube is, as Dr. Gardner states, decidedly better than in ordinary tubes.

FIG. 4.

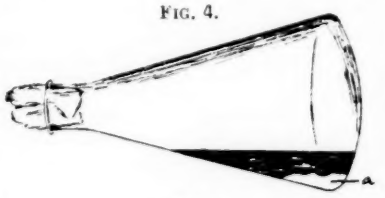


FIG. 5.

2. In case the angled tube is objected to, and only ordinary laboratory apparatus preferred, I have modified the method by paraffining the side of a flask. The blood is allowed to clot in contact with this surface, the flask being kept on its side: the paraffined surface should not be so large that the blood does not touch the glass, or coagulation will be unduly delayed. When this is complete, turn the flask round so that the blood is uppermost. The serum will be very rapidly expressed, and form a pool on the opposite side of the flask. In one experiment the blood took one hour to clot, and gave 42·3 per cent. in another half-hour. (Figs. 4 and 5.)

I have to thank Mr. H. T. Rymer for his kindness in drawing me the illustrations which accompany this article.

GASTRIC ATONY AND WAR NEURASTHENIA.

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I SHOULD like to begin this short paper by an extract from Cannon's article on the Nature of Gastric Peristalsis.[1]

"Tonus as an essential factor of gastric peristalsis is first given by vagus impulses and later maintained by the stomach itself—for (1) severing the vagi before feeding results in inactivity; (2) severing the vagi after digestion is started causes no change in gastric movements or in the rate of discharge. Probably a psychic tonus is developed by the taking of food. The method of maintaining the tonic state locally as digestion proceeds, and of increasing it as the stomach empties, is not yet determined; it may be the result of a 'contraction remainder' after each rhythmic pulsation.

"The above results account for the functions of the vagi and the splanchnics. They are nerves which increase or decrease the tonus of gastric musculature, and thereby affect peristalsis. The absence of stomach movements, for example, in states of exhaustion can be explained by the failure of vagus impulses, and in emotional states by the presence of splanchnic impulses. Both conditions result in absence of gastric tonus."

It seems to me that this physiological observation may throw some light on a condition which is at present a source of considerable trouble to those who are dealing with war neurasthenics.

Description of Condition.

I have seen in the past two years a large number of soldiers suffering from neurasthenia, either with or without a definite history of shell shock, who, in addition to the physical exhaustion and psychasthenia common in these cases, have suffered definitely from sensations referable to the abdomen, such as aching in the left hypochondrium, pain in the epigastrium, a sensation of constriction in the lower sternal region, and a general feeling of sinking referred not only to the epigastrium but perhaps to the whole abdomen. Many of these show disordered cardiac action, particularly in the direction of intermittent tachycardia, extrasystoles, or persistent rapid action. The systolic blood pressure is usually low, between 110 and 120. Many of them have suffered also from slight but definite pain in the right hypochondrium and right and left iliac regions. They are, for the most part, listless, suffer from loss of appetite, and complain of a feeling of distension after eating, which persists for some hours, and indeed may not pass off before the time for the next meal. Most of them are constipated, and some suffer from alternate constipation and diarrhœa.

All these men have been subjected, apart from definite shell shock, to experiences which are exhausting physically and mentally trying. Vigilance, anxiety, responsibility, and lack of sleep, together with exposure to noise, have all contributed to produce a condition of physical and mental exhaustion combined with severe emotional disturbance. One has to remember in dealing with such patients at the present time that in the case of the bravest man the emotion of fear, or if we choose to call it so, of anxiety, is a contributing factor in the production of any condition of muscular and nervous weakness.

The progress of such cases is in most instances unsatisfactory. They improve after rest in hospital up to a point—that is to say, they get stronger, sleep better, lose their fears, and are able to take an interest in their surroundings and in the general topics of the day. They may even be able to take up serious reading with interest. But the abdominal symptoms remain; although pain may disappear, uneasiness may persist either in the epigastrium or in the right or left hypochondrium, and under excitement or worry the feeling of sinking in the abdomen and the general muscular feebleness are apt to recur.

In the vast majority of such cases, in my experience, auscultatory percussion of the stomach reveals the fact that the upper border of clear percussion is unusually high, associated in many cases, but not invariably, with some spreading to the left of tympanitic percussion. An X ray examination after an opaque meal shows a high air bubble and a stomach slightly more capacious than normally and rather slow to empty. There may or may not be an undue amount of ileo-colic stasis.

[1] Cannon: The Nature of Gastric Peristalsis, Am. Journ. of Physiology, 1911–12, xxix., p. 264, &c.

Treatment.

This condition of gastro-intestinal atony may persist for a long time and is irksome to the patient and physician alike. It does not disappear even after a prolonged rest and careful dieting, or, if it does so, is apt to recur as soon as the patient begins to get about. It is not influenced very greatly by rigid dieting; indeed, a patient seems to do better on an ordinary sensible, mixed fresh food diet, so long as the food given does not contain too much indigestible residue, than when he is confined to a diet that is fluid or semi-fluid. In fact, in most cases the patient has a very fair idea of what he can eat and what he ought to avoid, but, of course, alcohol and the excessive use of tobacco must be forbidden. In respect of this point there is one caution that must be insisted upon, and that is that in those cases where the abdominal discomfort and pain is practically constant patients are apt, unless encouraged to eat, to avoid food almost entirely, and it has to be explained to them that any kind of food would give them the same amount of discomfort, and that they must eat if strength is to be maintained. This is a difficulty which presents itself in dealing with any kind of gastric neurasthenic.

Cannon's paper throws some light on the causation of their condition and also indicates along what lines treatment should proceed. The experiences of a man, and especially of an officer, during this war are such as to produce just that condition of exhaustion of vagus centres and emotional disturbance which tend to produce atony of the stomach either from failure of vagus impulses or from an excess of splanchnic impulses, with a resulting loss of gastric tone. The difference between the atony produced by emotional states through the splanchnics and that produced by the failure of vagus impulses on account of exhaustion of centres may be of some clinical importance both as regards prognosis and treatment. It is often of considerable difficulty to determine with which class of case one is confronted, and in the absence of any definite laboratory test there remains only the test of the clinical progress of the patient. It is my practice to keep all such cases in bed for a while after they have come under my observation, although they may have been in hospital for a considerable time previously, and treat them by the use of such general sedatives as bromide and belladonna, direct stimulants such as hydrastis, which Major Black has used with good effect in this connexion,[4] and by the manipulative methods and proper spacing of meals as described by Mitchell,[3] Wethered,[4] and McClure.[5] In a number of cases both the neurasthenic and abdominal conditions clear up rapidly under this combination of treatment, and I am inclined to believe that in these cases the gastric fault is largely due to an undue increase of splanchnic impulses, combined, perhaps, with local lesions of the gastro-intestinal mucous membrane, the result of hurried or improper feeding. There may be in such cases a certain amount of vagus failure, but not to any serious extent. Such patients do well, and are speedily advanced to convalescence and successfully returned to duty.

The Two Classes of Cases.

The majority of cases, however, do not recover quickly. The gastric condition improves and relapses, and although after many weeks of careful manipulative treatment, or even general massage, electrical treatment, and encouragement on the part of all in contact with him, the patient may leave the hospital feeling fairly well or even quite well, he tends to relapse at once if he undertakes work involving any great degree of muscular or physical strain.

These are the main differences between the two classes of neurasthenia associated with gastric atony which I have met with in soldiers. In the former class, who recover quickly and apparently completely after suitable treatment, I believe that the gastric atony is due to over-influence of splanchnics. By the use of suitable sedatives and stimulation of the vagus trunk by manipulative treatment over the abdominal areas, first described by Mitchell[3] and confirmed by Wethered[4] and McClure,[5] the proper balance between the vagus and splanchnic impulses to the stomach is restored, and the organ recovers its tone rapidly and completely. In the latter class, whose convalescence is long and too often incomplete, it appears likely that the nervous fault which produces the gastric atony is failure of impulses due to exhaustion of the vagus centres. This belief seems to be confirmed by the results of manipulative treatment in such cases. It appears to be likely that the stimulation of the skin areas over the abdomen induces increased tonus and peristalsis of the stomach through the vagus trunk, and the comparative failure of this line of treatment to produce either a rapid improvement or permanent cure in this latter group is only natural if the atony be due to exhaustion of vagus centres.

Cases Due to Vagus Failure.

Such cases are difficult to handle from the start. Their muscular feebleness, combined with abdominal discomfort, makes them apprehensive and depressed. From the psychological point of view it is no use telling them to buck up and help themselves to get well. A physician in charge can best encourage his patient by explaining from the outset that the illness is likely to be fairly long, improvement must be gradual, and perhaps a little slow, but that the ultimate outlook is good. It is not wise to keep these cases too long in hospital, as they absorb with great ease the hospital atmosphere and develop habits of invalidism. The best way of treating them is to have them rested sufficiently long and treated by all the special methods suitable for their condition, such as manipulative treatment of the abdomen, suitable baths and douches, and various kinds of electrical treatment, including the static. It is necessary to caution those who have such patients under their care that the manipulative treatment of the stomach by the excitation of the cutaneo-gastric reflex, while forming in my opinion an essential part of their treatment, must not be carried on too long at one sitting, as one is apt to tire the patient too much, simple and slight as the manipulation may appear to be.

After the first definite improvement has taken place, and the patient is able to go about, it is usually better in such cases to send him away from hospital for a time, so that he may live quietly in the country and take slight exercise well within his powers. After this period of rest the patient may be brought back again to hospital or may be treated as an out-patient, either in the consulting-room or a clinic, while living in some place other than a hospital, that is, in his own home or some small convalescent hospital where the medical atmosphere is not too obtrusive, and yet where he is still under control.

After a period of out-patient treatment of this kind the patient should again be sent to the country, and the necessity for recalling him as an out-patient depends upon his capacity for taking exercise and developing some hobby.

In addition to the forms of treatment mentioned many cases of this kind respond well to certain organo-therapeutic preparations. Certain polyglandular extracts, extracts prepared from the duodenal mucous membrane, pituitary extract, and small doses of thyroid combined with didymin, have all been found useful in suitable cases. I have come to the conclusion that proper organo-therapy is an essential part in the treatment of cases of vagus failure, and materially helps in the prevention of relapses.

It is well to point out that in a bad breakdown of this type it is useless to expect anything like a reasonable convalescence for many months, and during the whole period of treatment the patient should, as far as possible, be spared any unnecessary worry or excitement. I have known a case that was progressing favourably so upset by unskilful handling at his medical board that a serious relapse was induced. In this particular instance a most enthusiastic young soldier was practically charged with malingering, and the mental effect of this was disastrous. It is well for people to realise that even in war-time and in the case of a soldier a man may be very ill without presenting any very gross lesion on physical examination, and may, indeed, as far as fitness for service goes, be in as bad a condition as the man who has a stiff joint as the result of a bullet wound. It is true that a skilful malingerer may simulate with some success a neurasthenic state, but no one need make the mistake of classing as a malingerer a man who suffers from neurasthenia associated with gastric atony, whether due to the over-influence of splanchnics or the failure of vagus impulses. A little care in the examination of the abdomen in the recumbent position will reveal an upper border of stomach that is abnormally high, and perhaps some spreading of the gastric area of clear percussion to the left, while

[2] Proc. Roy. Soc. Med., January, 1917, Section of Balneology and Climatology, p. 29.
[3] THE LANCET, Jan. 28th, 1911.
[4] Practitioner, December, 1911.
[5] THE LANCET, Sept. 25th, 1915.

an X ray examination in the upright position will show a very high air bubble, and as often as not a definite degree of gastric stasis with some dropping of the stomach.

It is very wise in cases of this kind not to subject the patient too often to examination by a medical board. It is quite sufficient to examine them every three or even six months to begin with, and the time for such an examination, also, should be definitely fixed and the appointment kept by the examiners. I have known cases have a relapse while waiting anxiously for ten days or a fortnight before hearing that their medical board has been fixed. These may be small matters, but the treatment of neurasthenics is successful only by scrupulous attention to small matters, and the physician in charge needs every possible assistance from all those in any way connected with the case, whether in or out of hospital.

Harley-street, W.

DIATHERMY.

FOR THE TREATMENT OF CERTAIN LOCAL ABNORMALITIES OF THE SKIN.

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THERE appears to be among the general public quite a widespread impression that certain affections of the skin, which may be grouped under the title of "blemishes," are such as the medical profession does not deign to treat or considers of so little importance (perhaps merely a question of vanity) that they would not be inclined to give the attention which, in the opinion of the patient, the particular condition deserves. It is true, also, that a large number of practitioners are not aware of the advance in electro-therapeutics which permits of these "blemishes" being removed with an efficiency and accuracy which were not possible a few years ago. Small wonder, therefore, that many such sufferers are attracted by the flaunted advertisements of miraculous cures, whether by local applications, medicines, or at the hands of some unqualified practitioners.

In diathermy we possess a means of dealing with, and in most cases of effectually curing, many conditions of the skin which till recently had been treated in various other ways, often with only partial success.

The conditions referred to are such abnormalities as the different forms of moles and warts, corns, stellate veins, telangiectases, capillary nævi, port-wine marks, xanthelasma, acne, keloid, adenomata, freckles, &c.

The treatment formerly employed in these cases has usually come under one of the following heads: 1. Local applications of a caustic, such as silver nitrate, acetic acid, nitric acid, sulphuric acid, trichloracetic acid, &c. 2. The actual cautery. 3. Ionisation with chlorine, magnesium, zinc, &c., by means of pads soaked in solution of the appropriate salts and applied to the surface. 4. Simple electrolysis. 5. Transfixion with a zinc or copper needle and the passage of the electric current, thereby again employing the caustic ions of zinc or copper. 6. Freezing by means of carbonic acid snow.

Some of the advantages which the method shortly to be described presents over these methods are: (*a*) The rapidity with which the treatment can be carried out. (*b*) The absence of inflammatory reaction. (*c*) The accuracy and limitation which can be secured to definite areas, whether large or small and however irregular. (*d*) The depth to which destruction of tissue is to be carried out can be gauged and regulated. (*e*) Scarring is much reduced in area and less noticeable. (*f*) The treatment is comparatively painless. Even children frequently tolerate it without a murmur.

The Mode of Treatment.

The apparatus necessary consists of one of the various patterns of diathermy apparatus (several very efficient ones are now on the market made by English firms) and a high-frequency couch with handles. The patient is placed on the couch with his hands grasping the handles, and the electrodes from the diathermy apparatus are fastened to the metallic plate at the back of the couch and to the handles respectively. The current is then turned on to give a reading of from 0·25 amp. to 0·50 ampère. By this means the patient becomes part of a charged condenser, of which the cushion of the couch is the dielectric and he and the metallic plate at the back of the couch are the two conducting surfaces. If, then, a metallic instrument be approximated to his skin a discharge of electric current takes place from the skin to the instrument in the form of a spark. For the purpose under consideration a pointed silver probe (uninsulated) answers the purpose very well, but for the sake of adjustment to individual cases it is convenient to have several probes with fine and blunt pointing. An ebonite rod may be held in the left hand to place against the patient as a means of support for the operating hand. If this is not done unpleasant sparking may occur through inadvertently touching the patient.

The instrument is then brought at right-angles to the skin so that the point is almost in contact with the surface to be attacked, when fine sparking is observed to take place. This is allowed to occur for a variable time, measured by seconds, according to the depth and area to be treated, when a yellowish-white, depressed surface remains. Little or no surrounding inflammation occurs and no dressing is required. The destroyed area crumbles away in the course of a few days, leaving in the case of small moles no perceptible scar, and when larger surfaces have been treated a slightly depressed whitish, soft scar.

As an instance of the quickness with which this treatment can be carried out, I not long ago removed 17 moles on the face in less than ten minutes.

The powerful mental effect which, in the case of women particularly, so often accompanies a comparatively slight facial disfigurement is alone a justification of the importance of dealing effectively with many of these abnormalities.

THE RELATION OF THE CASE OF CEREBRO-SPINAL FEVER TO THE POSITIVE CONTACTS.

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AND

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ONE of the problems of practical importance in connexion with cerebro-spinal fever is the question whether the case has infected those of his contacts who are subsequently found to be positive, or whether the case has been infected by one of a collection of already positive contacts.

There appear to be two fundamentally different views upon this subject. According to the first, the case is essentially a carrier and is responsible for propagating the disease by spraying cocci from his throat. The positive contacts have derived their infection from the case and may develop the disease. According to the second view the case is not a carrier in the ordinary sense of the word, and is not specially responsible for propagating the disease. The positive contacts, if any, have derived their infection from another carrier, and the case is infected by one or more of these contacts.

The correct elucidation of this problem has a bearing upon cerebro-spinal fever administration in the Navy. The first view would suggest that if, for instance, a case is brought into a general ward before removal to an isolation hospital, not only the original messmates of the case should be swabbed, but also the patients in the ward, *to see if the case has infected anyone*. On the other hand, the second view would not entail the swabbing of the ward, because the object in view is to *find the carrier who infected the case*.

There appears to be no direct method by which this question may be settled, however excellent are the facilities for tracing infection. The positive contacts are only discovered upon the occurrence of a case, and then it cannot be deduced which individual acquired the coccus first. Indirectly, however, important evidence is forthcoming. According to the first view, the case must be a carrier before the onset of the disease. Further, if the case is a carrier it must be common for carriers to develop cerebro-spinal fever.

Our results obtained from a very large material indicate that neither of these consequences is correct.

1. *The presence of meningococci in the throats of cases before the onset of the disease.*—Owing to certain regulations which exist in the Navy it has been possible for us to examine the throats of a number of men who subsequently developed cerebro-spinal fever. On the outbreak of symptoms these men were treated in Haslar Hospital and were then repeatedly examined by us. In the following table the interval of time between the first swab and the onset of symptoms is indicated:—

Case No.	Date of swab before onset.	Result.	Date of onset.	Days' interval.
437	Dec. 1st, 1916	Neg.	Feb. 4th, 1917	65
182	,, 15th	,,	Jan. 3rd	19
705	,, 22nd	,,	March 7th	75
343	,, 23rd	,,	Jan. 13th	21
357	,, 29th	,,	,, 22nd	24
206	,, 31st	,,	,, 4th	4
344	,, 31st	,,	,, 20th	20
414	Jan. 8th, 1917	,,	,, 31st	23
469	,, 26th	,,	Feb. 8th	10
468	,, 31st	,,	,, 8th	8
568	Feb. 1st	,,	,, 19th	18
704	,, 3rd	,,	March 6th	31
536	,, 10th	,,	Feb. 15th	5
567	,, 11th	,,	,, 19th	8
565	,, 11th	,,	,, 19th	8
868	,, 13th	,,	April 11th	70
633	,, 18th	,,	Feb. 22nd	4
696	,, 22nd	,,	March 5th	11
790	,, 25th	,,	,, 7th	10
737	,, 25th	,,	,, 10th	13
809	,, 27th	,,	,, 21st	22
687	March 2nd	,,	,, 4th	2
841	,, 6th, April 4th and 10th	,,	April 18th	43, 14, and 8
706	March 8th	,,	March 12th	4
345	,, 13th and 16th	,,	April 2nd	20 and 17
1028	,, 18th	,,	May 27th	70

It will be observed that in every one of the 26 cases the swab taken before the onset was negative. One of the cases was examined three times and another twice. The swabs were taken at varying times before the onset, some of them very shortly before—namely, one 2 days and three 4 days.

It would, therefore, appear that cases of cerebro-spinal fever are not carriers before the onset of symptoms, or, allowing for an experimental error which cannot be high, cases can seldom be carriers before the onset.

2. *The occurrence of cerebro-spinal fever among carriers.*—It has been stated by Colonel M. H. Gordon "that every case of cerebro-spinal fever is ..... an instance of a carrier developing the disease." In the last section, however, it will be seen that this statement requires modification. In endeavouring to establish the occurrence of the disease among carriers, it is necessary to confine the inquiry to men who have actually been proved to be carriers before the onset of the supposed disease. Captain M. Flack in his report upon the outbreak in London[1] refers to four such cases as occurring among his 185 carriers. From the account given, however, it cannot be said to be certain that all of these men were instances of this phenomenon. We have had a considerably larger number of carriers under observation—namely, 485; all were interned in one camp, and all were proved to be carriers of epidemic types of meningococci. None of these men developed cerebro-spinal fever, and therefore we may conclude that a carrier very rarely develops the disease.

Since, therefore, both foundations for maintaining to the contrary are found to be wrong, we conclude that the case of cerebro-spinal fever is not specially responsible for the spread of the disease and is infected by one of the positive contacts.

We look upon the case as one of the rare individuals who cannot confine the meningococci to the naso-pharynx and merely "carry." Our results also appear to indicate that in such a case the cocci pass very rapidly to the central nervous system after gaining access to the naso-pharynx.

[1] Medical Research Committee. Special Report Series, No. 3, p. 59.

Dr. Fritz de Quervain, professor of surgery in the University of Basle, has succeeded to the chair of surgery at Berne left vacant by the death of Professor Kocher.—Dr. W. R. Hess has been appointed professor of physiology in the University of Zürich and director of the Physiological Institute.—Professor Jaillens has been chosen as successor to the late Professor Combe in the chair of pædiatrics at Lausanne University.

CARDIAC DIGITAL PERCUSSION.

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AND
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[*Prefatory Note by* Dr. GORDON.—My colleague, Mr. Bell, has been so good as to associate himself with me in this paper. I cannot over-emphasise the importance of his support. Mr. Bell is well known to be one of the finest violinists in the West of England, and the accuracy of his ear is unquestionable. For my own ear I can make no such claim, but in the technique of digital percussion even an indifferent pianist possesses some advantage.]

Consideration of Three Points.

We desire to direct attention to the following three points. (1) That the "superficial" as distinguished from the "deep" cardiac dullness is at present practically unimportant; (2) that the difference, generally described, between the results of "light" and "heavy" percussion in defining the cardiac dullness is, usually if not always, due to faulty methods of percussion; and (3) that the general failure to recognise the striking changes usually produced in the digital cardiac dullness by change of posture from erect to recumbent, is due to faulty methods of percussion, and is responsible for errors in diagnosis and prognosis which go far to interfere with the progress of cardiology.

1. *"Superficial" and "deep" cardiac dullness.*—We know of no authority on cardiac physical signs who does not lay stress on the distinction between "superficial" and "deep" cardiac dullness. But neither do we know of any who gives an adequate reason for doing so. For at present no practical use is made of the "superficial" dullness. A little reflection will make that evident. Some day some important use may be found for the "superficial" dullness, but at present it only serves to confuse the student, distracting his attention from the "deep" dullness which, with existing knowledge, alone really matters. We feel justified therefore, in what follows, in ignoring the unimportant "superficial" dullness and in speaking of the "deep" cardiac dullness simply as "the cardiac dullness."

2. *"Light" and "heavy" percussion.*—It is commonly said that "light" and "heavy" percussion give constantly quite different results in delimiting the cardiac dullness. Our experience is not in accordance with this. On the contrary, we find that, if a clear note be elicited, "light" and "heavy" percussion yield practically identical results. Obviously either we or those who find differently from us must be defective in hearing or in methods of percussion. As we are approaching the subject with a specially trained ear we do not admit any defect of hearing on our part. With methods of percussion we shall deal immediately.

3. *Posture and cardiac dullness.*—The failure of the profession generally to recognise the change in the cardiac dullness, which is usually produced by change of posture from the erect to the recumbent, is remarkable. But there can be no doubt of this failure. For when the change so caused in the normal dullness was pointed out in 1905 at a meeting of the Royal Medical and Chirurgical Society, it was a new fact and had to be verified[1]; in 1910, when attention was again drawn to it, and especially to the change in the rightward edge of the dullness, both in health and disease,[2] the correctness of the observations was at once called in question; and at the present time cardiac cases are continually being recorded with no statement added of the posture in which percussional measurements are made.

Text-book medical literature is silent on the subject. Obviously, therefore, either our method of percussion or that in general use must be defective. The question is "Which?" We naturally think that our own frequently repeated observations are correct, yet, if they are unverifiable by others, the presumption would be strong that some fallacy underlay them. They have, however, been repeatedly so verified. Further, they have yielded useful results which appear undiscoverable by the methods in fashion. Thus we have found almost constant differences in dullness in differing positions, whose recognition enables us to watch week by week with no fear of fallacy the progress of

cardiac cases under our treatment; where they are not present evident reasons have been found to explain their absence; and the remarkable diminution in the recumbent dullness in cases of cancer[3] has placed within our reach a new aid in diagnosis. All these facts have been already sufficiently enlarged on and illustrated in former papers.[4] We have therefore been emboldened to ask ourselves whether the methods in common use are superior to our own and to arrive at the very definite conclusion that they are not. In fact, we believe that we are enunciating a very important truth in asserting that the methods of digital percussion now in general use are faulty and misleading.

Comparison of Methods.

But, in making this assertion, we have first to define exactly what we mean by digital percussion. Of recent years, the modifications which, naturally enough, have arisen in percussional methods have rather tended to confuse the subject. Obviously we are not dealing with results obtained with pleximeters; equally obviously not with so-called "auscultatory percussion." Nor with so-called "palpatory percussion," which concerns itself, either wholly or in part, with the sense of differing resistance. Our remarks relate solely to the production of sounds by the percussion of finger on finger, at present incomparably the most important form of percussion, because incomparably the commonest. We would recall in passing the admitted fact that the results obtained by it in competent hands coincide remarkably with anatomical findings.

There is nothing new in our method, which differs in no material particular from that which is theoretically approved in text-books. It is this. Moving the right hand loosely from the wrist-joint, we strike with its middle finger, bent, as in piano-playing, to deliver the blow perpendicularly, upon the middle phalanx of the middle finger of the left hand, laid flat, evenly and rather lightly on the chest, parallel to the margin of the dullness to be defined. The note thus obtained, whether loud or faint, according to the force used, is clear.

When comparing the dullness in the erect with that in the recumbent position, in order to avoid possible errors of observation due to differing modes of application of the left hand to the chest, the left hand has been applied in both positions in the same way, with the fingers directed towards the abdomen.

On the other hand, the methods now in common use are by no means such as are theoretically approved in text-books. Comparatively few persons percuss loosely from the wrist or use their fingers as we have described. Two or three fingers are often used together to strike with, they are not bent to strike perpendicularly to the chest wall, and the impact is often more of a push than a blow. The results are what might be expected. The note is not clear and is sometimes scarcely even audible. Such indistinct percussion sounds are quite incapable of defining dullness with precision. Nor is this faultiness of method confined to the careless or to the second-rate. We have sometimes been filled with admiration, whilst listening to the percussion of better men than ourselves, at the acumen which could deduce anything from sounds so inadequate.

And for this the reason seems to us not far to seek. We venture to believe that the teaching of percussion is much below the high level otherwise maintained in medical education. It would appear that percussion is thought too simple an affair for serious trouble to be taken with it. But that is a most unfortunate mistake. A good method of percussion—i.e., one capable of producing a clear, clearly audible note—does not come naturally to anyone except a pianist, and often great pains must be spent upon its acquisition. Let us ask ourselves how often such pains are taken, or how often the need for them is insisted on. Not commonly, we believe And so a most important means of clinical investigation is not commonly acquired.

The history of percussion itself illustrates the difficulty the profession has always found with it. Auenbrugger, of Vienna, published his discovery of digital percussion in 1761. Yet little came of it for nearly half a century. Then in 1808 Corvisart, Napoleon I.'s physician, lighted on Auenbrugger's work and republished it in French with commentaries of his own. Even then, according to Sahli,[5] it did not become the common property of physicians until the second half of the nineteenth century. Something like a hundred years for the profession to acquaint itself with one of the most valuable clinical methods we possess!

In conclusion, we hope that the points we have raised will receive indulgent examination. For if we are right—and there is at least a reasonable case for our contentions—diagnosis and prognosis in heart disease are now commonly rendered defective to a serious degree, and, if this be so, it needs no tedious arguments to show that the progress of cardiology is thereby seriously interfered with.

References.—1. The Influence of Posture on the Normal Cardiac Sounds and on the Normal Cardiac Dullness, Med. Chir. Trans., vol. lxxxix., 1906. 2. The Rightward Edge of Cardiac Dullness, Brit. Med. Jour., June 4th, 1910. 3. The Cardiac Dullness in Cases of Cancer, Med. Chir. Trans., vol. lxxxvii., 1904; Diminished Cardiac Dullness in Cancer, Brit. Med. Jour., August 8th, 1908; Further Experience of the Cardiac Sign in Cancer, ibid., May 31st, 1913; The Value of the Cardiac Sign in Cancer, THE LANCET, Jan. 17th, 1914; The Value of the Cardiac Sign in the Diagnosis of Gastric Cancer, Practitioner, April, 1914; On Digital Percussion and the Cardiac Sign in Cancer, Bristol Med. Chir. Journ., March, 1914. 4. Besides the above, Bodily Posture and Cardiac Physical Signs, THE LANCET, August 10th, 1907. 5. Sahli: Diagnostic Methods, Potter's translation, p. 199.

NERVOUS CRETINISM.

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Major R. McCarrison, I.M.S., in his lectures on goitre, published several years ago,[1] declared that he has observed, in Gilgit, and other places where cretinism is endemic, certain cases in which some *indicia* of cretinism are associated with nervous disorder of the nature of spastic diplegia. He referred to these cases as "nervous cretinism," and described them as being often longheaded deaf-mutes, typically exhibiting a knock-kneed spasticity of the legs, with a stiff, bobbing gait, and exaggerated knee-jerks. He stated also that the upper limbs are frequently spastic, with the thumb tucked into the palm, whilst the toes are often flexed on the sole. The face was spoken of as "cretinoid," coarse nystagmus was mentioned as frequent, and variable squint as not uncommon.

A picture was drawn, in fine, of a kind of idiocy, associated not with the physical characters of the orthodox cretin but with "cerebral" spastic diplegia of the types so common at our out-patient departments and in our large institutions; and a definite relationship was established, on various grounds, including that of therapeutic result, between these cases, and the commonly recognised cases of endemic dysthyreosis known as "cretins." At the same time the existence of *minor degrees of "nervous cretinism"* was clearly indicated.

Demonstration of Cases in England.

Little notice, unfortunately, was taken of this portion of Major McCarrison's lectures, but Dr. (Major) Frederick Langmead, in 1913, demonstrated what he suggested to be a case of "nervous cretinism"[2] which was somewhat freely criticised, in that the child did not appear to be a cretin in the ordinary sense of the word—one of the chief points made by McCarrison himself!

Such criticisms were, however, not substantial; and there is no doubt, I think, that Dr. Langmead did indeed show a case of dysthyreosis of the type called "nervous cretinism" by Major McCarrison. It at once called to my mind a private patient of my own, a little girl, whose mother suffered from a mild degree of exophthalmic goitre, and who was brought to me because, to use the mother's own words, "she always stood on her toes and pointed them in a funny way." There was, indeed, a tonic and persistent spasm of the calf muscles and the child walked badly. She was cutting her last milk teeth, and I thought she looked hypothyroidal. I ordered her some thyroid gland substance for that reason and, on seeing her again some weeks later, found that the gait was much improved and that the spasm had disappeared.

At the time that Dr. Langmead showed his case I was attached to the Belgrave Hospital and was able, in the course of a few months, to find several cases (corresponding to McCarrison's description of the milder types) which improved on thyroid feeding. One of these was shown at a meeting of the Section for the Study of Disease in Children of the Royal Society of Medicine.[3] My predecessor, Dr. Hildred Carlill, had seen the child some months earlier,

before, indeed, the onset of the nervous symptoms, and had marked the case-sheet "? hypothyroidal." When I saw her there were spasm and weakness of the legs, and the "cretinoid" manifestations were as slight as they usually are in these cases. But the spasm and diplegia disappeared completely under thyroid feeding and the child began again to talk freely. She had latterly been relatively mute.

I therefore express the opinion that, just as McCarrison has established the existence in places where cretinism is endemic of a spastic diplegia of varying degree, relieved, at any rate, when not of long standing, by thyroid treatment, so also in England are sporadic cases of similar nature to be met with *if looked for*. In nearly every case of this nature that I have seen there has been definite evidence of dysthyreosis in the mother or in one or more other children of the same family

A Form of Thyroiditis in Brazil.

Reference must now be made to the work of Chagas, who is the discoverer, in Brazil, of a peculiar "epi-endemic" variety of thyroiditis associated with a trypanosome infection, and who insists that a proportion of the individuals attacked by this trypanosome (*T. cruzi*) and, developing the specific thyroiditis, come to suffer from a kind of "Little's disease" or "cerebral diplegia," whereof the signs and symptoms vary from slight spasticity, with increase of knee-jerks and tottering gait, to absolute idiocy and gross spastic diplegia.[4]

I do not know that Chagas has treated any of his cases with preparations of thyroid gland, and I gather that he is inclined to attribute the amentia and spastic palsy to cerebral changes wrought by the trypanosome rather than to any consequence of the thyroiditis itself; but the fact remains that he, independently of McCarrison, has established the clinical co-existence of dysthyreosis and spastic diplegia.

And, moreover, one must recall that which has been written or is known concerning the relation between the thyroid, the parathyroids, and tetany, making particular reference to the valuable paper by Paton and Findlay, and to the letter by Dr. Forsyth in response thereto, that have recently appeared in the *British Medical Journal*.[5 6]

Bearing in mind, too, the association of lenticular degeneration with a form of hepatic disease, it is foolish to assert, as I have heard it asserted, on *a priori* grounds, that the cerebral changes of Chagas's long-standing cases can have *no* relation to thyroidal or parathyroidal insufficiency, and equally unwise hastily to discredit the suggestion that there is a definite spastic diplegia to be met with in England, associated with dysthyreosis and relieved by thyroid feeding.

Later Observations: Description of Condition.

Since returning from France early this year, after an absence of more than two years, that has broken all links with the 10 or 12 cases I had under observation in 1914, I have come across ten or a dozen more, of which eight are at present under treatment, and definitely and steadily improving, and I venture, therefore, provisionally to summarise some present conclusions in dogmatic form:—

The nervous symptoms that are associated in the child with atypical athyreosis are to be recognised as forming degrees of the state described by McCarrison as "nervous cretinism."

"Nervous cretinism" occurs in England, possibly endemically, but certainly, if not "sporadically," at any rate without obvious endemic associations.

In almost every case that I have seen which appears to deserve the appellation of "nervous cretinism," there has been evidence of dysthyreosis in the mother or other members of her family.

The earliest manifestations of *mild* "nervous cretinism" are generally regarded as "tetany," and occur towards the end of the second year of life (or a little later), when the child has well learnt to walk and talk.

There is sometimes seen about this time a pale puffiness or fatness that represents the myxœdematous phase of dysthyreosis; it is usually only transient, and there is some reason also to think that the nervous symptoms themselves are not necessarily progressive even when untreated, but may tend towards regression.

Following the "tetany"—or stage of remittent spasm—there may ensue a stage of weakness, with tottering gait, and a more persistent spasm that passes into a condition not to be distinguished from "congenital spastic diplegia" or "Little's disease" of moderate degree.

In the more severe cases mental defect is obvious almost from very earl days, and the early appearance of spasm with nystagmus leads to the confident diagnosis of congenital spastic diplegia.

The relation of these cases to the group of "mild" nervous cretinism is shown by the familial dysthyreosis and by the at least partial response to thyroid medication: sometimes by familial incidence. The mild cases whose nervous symptoms first attract notice towards the end of the second year or thereabouts are not "cretins" in the ordinary sense of the term and frequently, in the beginning, docile and pleasing children. They are sometimes, however, broad-headed and their "hypothyroidal" quality may be manifest in the arrangement of their forehead hair and eyebrows, and in the waxen puffiness of their skin.

Whilst there is no reason at all to suppose that more than a certain proportion of cases of "congenital spastic diplegia" are really cases of "nervous cretinism" it should be remembered that: (*a*) The results of the post-mortem investigations on these cases are oddly puzzling, anomalous, and inconsistent;[7] (*b*) in many cases of congenital spastic diplegia there is *no* history of prolonged, difficult, or instrumental labour; (*c*) oftentimes the mother definitely asserts that the child had "nothing wrong till two or later," and once walked well; (*d*) *familial* congenital spastic diplegia is described.

No claim is made for the "cure" of established cases of "Little's disease" or congenital spastic palsy by thyroid tablets; but certain cases of young children, diagnosed by specially competent physicians as "congenital spastic diplegia with amentia," have definitely responded to treatment by thyroid; whilst cases of "tetany," "spasm," "weak legs," and so forth, recognised as corresponding to McCarrison's milder cases of nervous cretinism, have become quite cured whilst taking the same substance. The effects, on similar cases, of parathyroid medication, I have not yet noted.

References.—1. McCarrison, Major, I.M.S.: THE LANCET, 1908, ii., 1278. 2. Langmead, Fredk.: Proc. Roy. Soc. Med., 1913; Section for the Study of Disease in Children; March 28th. 3. Crookshank, F. G.: Ibid., Nov. 28th. 4. Chagas: Nouvelle Iconographie de la Salpetrière, 1913, xxvi., 1. 5. Paton and Findlay: Brit. Med. Jour., 1917, i., 575. 6. Forsyth: Ibid., 1917, i., 632. 7. Garrod, Batten, and Thursfield: Diseases of Children.

Harley-street, W.

A NOTE ON THE OCCURRENCE OF "BLUE PUS" IN SEPTIC WOUNDS.

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THE appearance of "blue pus" in an open wound has long been recognised as a complication that may occur during the healing process and has generally been regarded as an ill omen, and dealt with by the application of antiseptics, such as carbolic acid, with a view to its destruction; the results of this were generally quite successful, the blue colour and peculiar odour disappearing almost at once from the wound.

In the many septic wounds with which we have had to deal recently it has struck us as peculiar in what a relatively large number of them the *Bacillus pyocyaneus* has appeared; it makes its appearance suddenly, in wounds both recent and old, generally in one that has rather a large open surface, pays but a short visit, and vanishes as rapidly as it appears.

Sometimes in opening the dressing of a wound which has apparently been running a normal course the characteristic odour is at once noticeable, and one finds the wound, dressings and surrounding skin all covered with blue pus; the same dressing may be continued and in one, two, or three days all blue colour and odour may have disappeared and the wound apparently returned to its former condition. Meanwhile the patient's general condition shows no change, the temperature is not altered, pain is neither more nor less, and in spite of the great disturbance that must have occurred among the microbic inhabitants of the wound owing to the extraordinarily rapid increase of *B. pyocyaneus*, the short visitation would seem to have brought about no change. It has, however, been our experience that wounds in which this

occurs almost invariably do well afterwards; there may be no change for a day or two, but then an improvement takes place, the granulating surfaces become more healthy and vigorous, and healing follows quickly. Why this should be is not very apparent; it may be that the very rapid growth of *B. pyocyaneus* merely ousts or actually destroys the septic organisms that were present in the wound, or it may be that the bacillus is present from the beginning, and only increases with such vigour when the other organisms are weakening and have lost some of their vitality, so that the wound is already beginning to mend, and thus the spread of *B. pyocyaneus* may have no share in bringing about an improvement; in the latter case one would have expected the growth of *B. pyocyaneus* to continue instead of disappearing again rapidly as it generally does.

It has thus come about that we have learnt to regard the appearance of blue pus in a septic wound as a favourable sign rather than the contrary, fully expecting that in due course improvement will come, and this has been so sure that a trial has been made to see what good would come of infecting sluggish or unhealthy-looking wounds with *Bacillus pyocyaneus*. It proved to be rather difficult to get the infection to take; at first the wounds were merely touched with an emulsion of living organisms, and subsequently other more vigorous methods were employed, such as packing a wound with infected gauze, scratching the surface of the wound before infecting it and inserting on to a wound a living culture with the medium. The results were variable; in many absolutely nothing occurred, but in some infection took place, and in these a marked subsequent improvement occurred in the condition of the wounds; on no occasion did any harm come to the wound or to the patient. Here, again, the question will naturally arise, Did the infection destroy or oust other organisms and so do good, or was it that only in those wounds that were on the point of improving naturally could infection be obtained?

An interesting point noticed lately has been that the antiseptic flavine appears to have no effect on the *Bacillus pyocyaneus;* at any rate, in open wounds where septic organisms are also present the two seem quite compatible, to the great advantage of the wound.

From a bacteriological point of view this clinical observation is of interest, for the antagonism of *Bacillus pyocyaneus* to certain other bacteria has been shown by its power to impede the growth of the bacillus of anthrax in cultures and by the injection into an animal susceptible to anthrax of a mixture of the bacilli of blue pus and of anthrax, the latter disease then failing to develop. Porcelain-filtered cultures of *B. pyocyaneus* are said to have similar properties. Kitasato found that *B. pyocyaneus* prevented the development of the vibrio of Asiatic cholera, and Rumpf claimed similar antagonism to *Bacillus typhosus*, but experiments designed to repeat the latter's observation show that the subject appears to be rendered more than usually susceptible to the action of enteric and of colon bacillus. The ferment pyocyanase has been used for the removal of diphtheritic membrane and in the treatment of nasal catarrhs.

Bacillus pyocyaneus shows considerable morphological variation and its chromogenic powers seem equally inconstant. For example, from one of the wounds described above cultures infected on the first day of the sudden appearance of blue pus in the dressings showed *B. pyocyaneus*, which produced abundant brilliant pigment, and by the rapidity of its growth rendered isolation of accompanying organisms difficult, while on the next day the wound and dressings without alteration in treatment presented neither the characteristic colour nor odour, and cultures on the same media showed *B. pyocyaneus* in markedly reduced numbers, growing feebly, and only after three days producing pigment, even that being of the brownish variety, the bluish colour being absent throughout.

Although usually harmless and sometimes apparently beneficial to a wound, *B. pyocyaneus* must always be regarded as at least a possible source of danger, as it can (though rarely) be recovered from the blood stream in certain terminal conditions, and has been described as the primary cause of a few cases of otitis and of enteritis.

Experiments *in vitro* suggest that *B. pyocyaneus* has little, if any, power to impede the growth of *Streptococcus pyogenes* and *Staphylococcus aureus*, though possibly its products in the complex media presented by a wound may be of a different and deterrent nature.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF STRANGULATED FEMORAL HERNIA.

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THE following case of strangulated femoral hernia presents some unusual features.

Mrs. A., a strong, healthy-looking woman, aged 50, whose only previous illness was perimastoid suppuration four years ago, gave a history of her present illness as follows. During the last five or six months she had been suffering from occasional severe attacks of pain in the right iliac region. The pain was so severe that it "doubled her up," and if it came on when she was out for a walk it was with difficulty she reached home. It usually made her sick, kept her in bed for a day or so, and then passed off, leaving her little the worse except for a bad taste in the mouth and a distaste for food for some days. She was constipated, as a rule, both before and after an attack. She had never noticed any swelling in the groin during any of this time.

On June 1st, 1916, an exceptionally severe attack developed, but passed off as usual next day. On June 12th, 1916, she went to bed as usual, but was wakened in the night by a severe pain in the right groin and was sick. The pain continued to increase and spread over the whole abdomen. It was still present next morning and was getting worse, being now especially severe round and above the umbilicus. She was sick again about midday (June 13th) and sent for me.

When I saw the patient about 2 P.M. she was in bed, had an anxious drawn expression, and had just vomited about a quarter of a pint of green stomach contents. She complained of pain in the abdomen, coming on in paroxysms, especially in the right groin and just above the umbilicus. The bowels had been opened that morning. The temperature was 97° F. and pulse 68 per minute. The tongue was furred and inclined to be dry down the centre. The abdomen was slightly distended and tympanitic, but was flaccid on palpation. There was no special area of tenderness, but in the right groin was a firm, hard lump about the size of a Tangerine orange, dull on percussion, and with no impulse on coughing. I diagnosed a strangulated femoral hernia and advised immediate operation for its relief. She was accordingly admitted to the Merthyr Guest Hospital, Templecombe, and I operated at 3 P.M. that afternoon.

Operation.—After the usual shaving and painting the skin with chloroformum iodi, an incision was made vertically and to the inner side of the lump about three inches long. The hernial sac was thin and, on being opened, was found to contain, besides about one ounce of clear fluid, the cæcum and appendix. The cæcum was nearly black in colour but shiny in appearance. The appendix was swollen to twice its normal size, was black in colour and dull and lustreless in appearance. There were also some tough adhesions between the base of the appendix and the peritoneum forming the neck of the sac. There was no doubt in my mind that the appendix would not recover if returned to the abdomen; I therefore decided to remove it. I first of all cut the adhesions between two ligatures, and, after tying the meso-appendix, removed the appendix and invaginated the stump in the cæcum by means of a purse-string suture. I then made two small incisions in Gimbernat's ligament, returned the cæcum to the abdomen, ligatured the sac as high up as possible, and cut it off below the ligature. Making no attempt at a radical cure, as the condition of the patient would not admit of this, I sutured the skin with salmon gut and returned the patient to bed.

The wound healed by first intention, recovery was uninterrupted, and she has been free from all pain in the abdomen since the operation, which was performed a year ago.

The interest of this case lies in the fact that the patient had before strangulation probably suffered from, at least, three attacks of appendicitis of a mild nature but sufficiently severe to cause the formation of adhesions between the appendix and parietal peritoneum. Another point of interest and importance is the fact that when the cæcum and appendix became strangulated in the hernia it was the appendix which suffered the more severely, evidenced by

the fact that the appendix was dull and lustreless whilst the cæcum was shiny in appearance; this is possibly accounted for by the fact that the appendicular artery anastomoses with the vessels in the cæcum to a very limited extent,[1] so that in the event of it becoming obstructed, gangrene of the appendix is very prone to supervene with great rapidity.

CASE OF EXTRA-UTERINE GESTATION.

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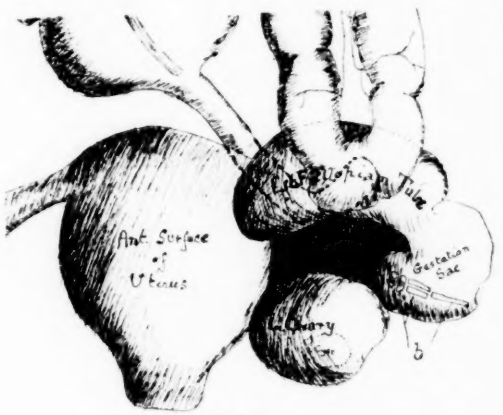
SURGICAL REGISTRAR, LONDON TEMPERANCE HOSPITAL.

Patient, aged 31, was admitted to the London Temperance Hospital on Oct. 10th, 1916, under the care of Dr. Kevin Byrne; she had had abdominal pain for 12 months. She was married in August, 1914. Confined on Nov. 4th, 1915, of her first child at seven months (died in 15 hours). Six weeks later had her first monthly period, which was a heavy one and lasted one week. One month after this there was a very scanty loss every few days up to February, 1916, when a "piece of shaggy flesh" was passed (no blood with it). Then *total cessation* of menses until August, after which periods became regular and normal in amount. Patient had had abdominal pain since her confinement, but in February last she had "labour-like pains," and considered herself pregnant. Sent into an infirmary, where she remained from March to July. Here she was curetted "for a miscarriage." The pains continued, and patient felt weak.



b, Fœtal bones.

On admission to the London Temperance Hospital on Oct. 10th a large swelling was in right side of pelvis and pouch of Douglas. No vaginal discharge. Uterus slightly larger than normal and pushed over to the left. Nov. 8th: Note by Dr. Byrne. "The swelling on right side is smaller but still tender. There is a swelling, not previously observed, in corresponding region to left of uterus. She has complained of rather more pain in lower abdomen and extending from right side to left." Nov. 12th: Menstruating. Nov. 16th: Pain in lower abdomen, especially right side, much worse to-day. Pain on superficial palpation; relieved on *deep* palpation. No rigidity. Nov. 24th: Operation by Mr. J. McClure.

On opening abdomen the omentum, vermiform appendix, and a loop of ileum were found adherent to the fundus of the uterus on the left side. On freeing these (in doing which a small part of serous coat of gut was torn and had to be stitched up) a hard mass was found at the left tubo-uterine junction. This turned out to be the left greatly dilated tube and ovary, on the surface of which were some fœtal bones (as in figure, *b*)—viz., a femur, tibia, and fibula, also metatarsals of both feet. Close to the former and parallel to them were some nodules thought to be the spine, with cranium at lower pole. Parts removed were both Fallopian tubes, left ovary, gestation sac, and vermiform appendix. Patient made an uninterrupted recovery.

I am indebted to Dr. Byrne and Mr. McClure for permission to report this case.

[1] A Treatise on Applied Anatomy, by E. H. Taylor, p. 485.

ST. THOMAS'S HOSPITAL MEDICAL SCHOOL.—R. H. O. B. Robinson, King's College, Cambridge, has been awarded the University Scholarship of £50.

Reviews and Notices of Books.

1. *The Causes of Tuberculosis.* By LOUIS COBBETT, M.D. Camb., F.R.C.S. Eng., University Lecturer in Pathology, Cambridge. Cambridge: The University Press. 1917. Pp. 707. Price 21*s.* net.
2. *Clinical Tuberculosis.* By FRANCIS MARION POTTENGER, A.M., M.D., LL.D. With a chapter on Laboratory Methods by JOSEPH ELBERT POTTENGER, A.B., M.D. In two volumes. London and Glasgow: Henry Kimpton. 1917. Pp. 1416.

1. THIS book on the Causes of Tuberculosis is primarily a digest of the work of the late Royal Commission on Tuberculosis, of the reported activities of the Local Government Board, of the Health Department of the City of New York, and of the Imperial Board of Health of Berlin. It is also a good deal more, for the author, who has personally contributed much spade-work to researches on tuberculosis, has gone considerably further afield in collecting valuable material. He has also brought out his facts so skilfully that the validity of most of his conclusions will be questioned by few. His is the ambitious object of providing a book at once for the medical profession and the lay public. Undoubtedly it will prove useful to both, and as a basis for lectures both to students and the public it should be invaluable. The earlier chapters deal with the incidence of tuberculosis and the wonderful decline in the mortality from this cause during the last half century. On the basis of the calculation that "the ratio of deaths to population has fallen by more than 50 per cent." in this period, the author anticipates that "tuberculosis will have become a rare disease before the end of the century." One of his most interesting conclusions is that in the case of both human and bovine tuberculosis "..... in the main it is the large doses of bacilli which are dangerous, and that small ones are often harmless or even beneficial by increasing resistance." His recommendations for combating both these forms of tuberculosis reflect this view. The author is in favour of segregation, but he thinks that compulsion with this object must, except in very exceptional cases, be renounced. He is, as a rule, so careful to weigh available evidence before attempting to formulate his conclusions that it is surprising to find him digressing from his main thesis to pass judgment on the achievements of sanatoriums without adequately reviewing the arguments for and against them. They "take," he says, "away with one hand what they give with the other." This attitude is surprising in a "segregationalist," as the provision of ample sanatorium accommodation automatically helps to solve the problem of segregation in the least objectionable manner. To recommend segregation without a full discussion of all it implies is dangerous in a book partly intended for non-medical readers. The book, as an exposition of present-day knowledge of the causes of tuberculosis, merits unreserved praise.

2. Progress in our knowledge of tuberculosis is, along certain lines, so rapid that the sight of these bulky volumes at once suggests the mournful reflection that in a few years they may be out of date. But on closer scrutiny these regrets prove superfluous, for this work is not just a compilation of others' researches brought up to date. It represents rather the experience and thoughts of one man—the author. His is a record of observations made during 20 years of clinical study conducted mainly at the Pottenger Sanatorium, California, and the reader will be struck by the originality of thought and the consistency of effort directed along certain specialised lines. And yet the author shows a catholic knowledge of other aspects of his subject. In the chapter on modes of infection the author says he has not had a single case of direct infection of employees and attendants in sanatoriums brought to his attention. He sees in "massive" infection of children the chief danger which, if avoided, would greatly limit active tuberculosis in the adult. Further, he believes that recognition of the significance of early lymphatic tuberculosis would supply "the key to the tuberculous problem." He notes that tuberculin in childhood may often be the determining factor for good between the years 5 to 10 or 12. In a later chapter he says of tuberculin that, after 20 years' experience, he

believes that, properly administered, it "will add at least a minimum of 20 per cent. to the chances of healing." But he is evidently no blind tuberculin fanatic, and he insists on its uselessness except in the hands of the expert prepared to individualise and to avoid all routine or haphazard methods. A distinctive feature of the chapters on diagnosis is the almost meticulous study of symptoms, of which, even in the early stages, about 30 are described. By careful analysis these symptoms are placed in three groups according to their etiology, which may be toxæmic, reflex, or local (the tuberculous process *per se*). Nervous instability belongs, for example, to the first group, cough to the second, and hæmoptysis to the third. The author then tries to show how toxæmia can produce nervous instability and reflex action produce cough. His main clue to these problems is sought in the nervous system, and he is indefatigable in following up the paths of reflex action. As he says:—

In tuberculosis we must conceive of a condition in which both the vagus and the sympathetic systems are simultaneously stimulated, but one in which either one or the other usually yields with a resultant disturbed equilibrium.

This, for example, is how he analyses the rapid pulse of tuberculosis (p. 231):—

It has long been said that a persistently rapid pulse in tuberculosis means a bad prognosis: While this is not invariably true, there is some ground for it, because it means that the patient's sympathetic tonus is in the ascendancy. ..... It would be more rational to state that those patients who are distinctly of the sympathetic tonus type, or those people who have a decreased vagus tonus, which means practically the same thing, are not as able to withstand the disease as those who have increased vagus tonus.

The author attaches great importance to the mental factor in tuberculosis, and he sees in the possession of magnetism, "Geist," personality by the physician an almost essential qualification. Thus (p. 651):—

I would rather have a patient treated in a room, if I could give him the benefit of hydrotherapy and psychotherapy, with good food, than treat him in the open air, with hydrotherapy and psychotherapy omitted.

We have dwelt rather on the unusual than on the more commonplace features of this book, so let us add that it also represents, broadly speaking, the views of the ablest pathologists and physicians of the day on the various aspects of tuberculosis. The author has a trick of iteration. The points he would emphasise and establish as pivots about which lesser factors revolve recur again and again. They constitute refrains running throughout his work. It would be easy enough for him greatly to condense what he has to say, but it would be at the loss of a fluent easy rhythm which conveys a vast store of knowledge. The book offers no points of comparison with the average text-book and forms a comprehensive survey of its subject.

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1. *Les Psychonévroses de Guerre.* By G. ROUSSY, Professeur agrégé à la Faculté de Médecine de Paris; and JEAN LHERMITTE, Ancien Chef de Laboratoire à la Faculté de Médecine de Paris. With 13 plates. Paris: Masson et Cie. 1917. Pp. 187. Price 4 francs.
2. *Hystérie-Pithiatisme et Troubles Nerveux d'Ordre Réflexe.* By J. BABINSKI, Membre de l'Académie de Médecine; and J. FROMENT, Professeur agrégé, Médecin des Hôpitaux de Lyon. With 37 figures and 8 plates. 1917. Pp. 267. Same publishers and price.

1. THIS useful little volume is one of the latest additions to the series of war monographs published by the well-known house of Masson. The authors include under the term psychoneurosis every variety of functional disturbance from the simplest to the most complex, from those whose expression is almost entirely physical to those where psychical symptoms predominate. Thus they comprise in their précis impairment of gait, involuntary movements of all sorts, sensory phenomena, disturbances of the special senses, visceral troubles, anxiety-hysteria, and the various mental symptoms of head injuries, shell shock cases, and the other pathological states with which the war has made us familiar. A chapter is devoted to commotio cerebralis. The etiology of these different neuropathic and psychopathic conditions is outlined in some detail, and several sections are taken up with an attempt to guide the reader to a clear understanding of the part played by "simulation-exaggeration" and "simulation-prolongation." The chapters on treatment are particularly good. The rôle of the physician, and of the patient, the environment, and the exact procedures desirable receive full consideration. The authors believe in reasoned and persuasive psychotherapy after the manner of Dejerine, Dubois, and Babinski. They hold that suggestion under hypnotism should be abandoned altogether. In their hands the methods here specified have been successful in from 98 to 99 per cent. of cases.

2. In view of the therapeutic importance of clearly distinguishing hysterical from other functional disorders of the central nervous system arising in the course of warfare a practical knowledge of their differential diagnosis is essential. We do not know any modern volume in which the reader will find these difficult subjects so lucidly explained as in this, not merely because one of the best working hypotheses of hysteria is associated with the name of M. Babinski, but also because of the learned way in which the peculiarities of the condition known as reflex paralysis, often confused with hysteria, are here presented for consideration. Reflex paralysis is a subject to which much attention has been given, yet in England the profession as a whole can scarcely be said to be familiar with it; since, however, it appears to occupy a place intermediate between the organic and the functional, its importance is considerable. No doubt in this excellent little book the authors are more concerned with an exposition of their own views than with an examination of the views of others, but its obvious merits should commend it to all who are in search of a compendium of information on war hysteria and allied conditions, where questions of diagnosis, prognosis, and treatment are handled at some length. There is, at the same time, more in the book than its appeal to the physician on the ground of practical usefulness; its appendices contain observations of much scientific interest for the neurologist, and there is a bibliography of some 250 references. There are illustrative photographs and diagrams.

Microbiology: A Text-book of Micro-organisms, General and Applied. By Various Contributors. Edited by CHARLES E. MARSHALL, Professor of Microbiology and Director of Graduate School, Massachusetts Agricultural College. Second edition, revised and enlarged. With 186 illustrations. London: J. and A. Churchill. Pp. 900. Price 12*s.* 6*d.* net.

IN a review of the first edition of this book in THE LANCET of April 27th, 1912, the special features which distinguished the work were noted at some length. It differed from the ordinary text-book in that it was a collection of short monographs by specialists and not the product of a single author. There was, however, less overlapping and greater uniformity of treatment than might have been anticipated. Further, the book was not apparently directed to the needs of any special group of readers, but furnished part of a general liberal education. Its descriptive title was "Microbiology for Agricultural and Domestic Science Students," and "domestic science" was interpreted so as to include the diseases of men and animals, plant diseases, sanitation, and, in fact, any subject in which micro-organisms played a part. The articles were not, however, of a popular character, but were a series of able, if necessarily limited, monographs. All laboratory methods were eliminated. The qualifying expressions of the original title have now been dropped, and the book is described as an elementary technical treatise on the subjects included under the term microbiology, but there is no essential change in this second edition either in method or scope. There has been a general revision of the work, and certain additions have been made which have increased the size of the book by some 300 pages, while the illustrations are also more numerous. The cytology of micro-organisms has become more defined in recent years and has received additional attention in the present edition at the hands of Dr. Guilliermond, professor of botany at Lyons. A chapter has also been added on intestinal microbiology. The space devoted to the microbial diseases of insects has been increased, and especial attention is paid to those diseases which are of economic importance, such as that caused by *B. acridiorum* in locusts and those which affect bees.

The book certainly gives a good general view of a very wide field of knowledge. The size of the book still remains moderate, and no fault can be found with the type and general appearance.

Cerebellar Abscess: its Etiology, Pathology, Diagnosis, and Treatment, including Anatomy and Physiology of the Cerebellum. By ISIDORE FRIESNER, M.D., Adjunct Professor of Otology and Assistant Aural Surgeon, Manhattan Eye, Ear, and Throat Hospital, New York, &c., and ALFRED BRAUN, M.D., F.A.C.S., Assistant Aural Surgeon, Manhattan Eye, Ear, and Throat Hospital, New York, &c. With 10 full-page plates and 16 illustrations in text. London: William Heinemann. 1917. Pp. 186. Price 12*s.* 6*d.* net.

THE authors have compiled a useful monograph on cerebellar abscess in all its bearings. The sections on the anatomy and physiology of the cerebellum contain a résumé of the most recent work on the subject, of German origin, be it remarked, for while Lewandowsky, Rothmann, and Bárány are quoted from freely there is little apparent appreciation of the investigations of Horsley and R. H. Clarke, and the valuable researches of André Thomas and Durupt on cerebellar localisation are ignored. Further, in the sections on symptomatology Bárány's tests are described in full, but there is no reference to the methods of Babinski, which are in some ways preferable. It is curious, too, that while investigations associated with the names of German workers are usually quoted from the original sources, methods of examination for which we are entirely indebted to the French and English schools of neurology, are freely described without any acknowledgment of their origin. The apparently one-sided nature of the writers' knowledge of cerebellar research is regrettable.

From the clinical standpoint the common cerebellar symptoms are, on the whole, fairly presented to the reader, though we notice a differentiation is drawn between the "character" and the "behaviour" of nystagmus which is far from clear. Further, we are of the opinion that a greater acquaintance with cerebellar disease other than abscess might have led the authors to modify certain of their statements. Tremor is mentioned, but its localising significance is not stated; deviation of the head in certain cases is referred to, but not described in the specific way in which it usually occurs. Cerebellar gait is not noted except in the briefest fashion; dysmetria, asynergy, and adiadokokinesis are described separately without any hint of their interrelation. The chapters on the prognosis and treatment of cerebellar abscess are, on the other hand, more complete and satisfactory.

The Treatment of Tabetic Ataxia by Means of Systematic Exercise. By Dr. H. S. FRENKEL, Medical Superintendent of the Sanatorium "Freihof" in Heiden (Switzerland). Second revised and enlarged English edition by L. FREYBERGER, J.P., M.D. Vienna, M.R.C.P. Lond., Barrister-at-Law of the Middle Temple, &c. With 129 illustrations. London: William Heinemann. 1917. Pp. 209. Price 12*s.* 6*d.* net.

Dr. Frenkel's exercises for the treatment of the ataxia of tabes dorsalis have become justly famous, and their abiding value in the tackling of a troublesome symptom has been demonstrated over and over again in the experience of physicians of all countries. Their rationale can be readily grasped when we remember the words of Hughlings Jackson, that when the dorsal columns of the cord are sclerosed the tabetic walks badly "with what of his cord is left." Hence the importance of endeavouring to educate, rather than to re-educate, the muscle groups by a new combination of the eye and what remains of the cutaneous and deep sensory apparatus. In this new edition there is full appreciation of the fact that the cause which keeps up the sclerosing process in the central nervous system must be obviated as far as possible by specific treatment, and in the last chapter modern methods are described with some detail. It is not the purpose of the book, however, to go into this question completely. But, given a tabetic in an early stage or, for that matter, in a chronic stage, his ataxia, other things being equal, will certainly be influenced favourably by patient treatment along the lines here described with ingenious care. We have said that Frenkel's exercises are familiar to the physician; he should become a possessor of this handbook to realise how much the method can effect and how applicable it is to all forms of impaired control over the muscular system.

JOURNALS.

Military Surgeon (Washington, D.C., U.S.A.).—The September number of this journal contains several articles of value on war surgery. Dr. E. B. Downer, Red Cross surgeon in Serbia and director of a private mission to Russia, reports excellent results from bone-grafting in the treatment of ununited fractures. The surgeon who takes up this branch should be first a skilled mechanic and next requires motor-driven tools. Dr. Downer declares he himself has the only motor-driven outfit in Russia. Bone splints lead to bone formation, but steel plates prevent it. The author's observations on surgical methods in each of the successive years of the war are judicious and should be read.—Lieutenant-Colonel W. L. Keller, Medical Corps, U.S. Army, sends a valuable paper on Surgical Work in a United States Army Hospital. Amongst other things he describes a novel and successful treatment for bubo and for phagedænic ulcer. The Report of the Mesopotamia Commission is reviewed. It is regretted that the Commission included no medical member, and it is noted that, under those circumstances, it was unlikely the medical department would escape censure. It is observed that the preservation of the health of an army, and the efficient removal of its wounded have so much influence on the success or failure of every military undertaking that "so long as the medical department has no representation on the General Staff, there never can be any team-play in an army."—Colonel Goodwin, A.M.S., in an address to the United States War College, states as having held the post of A.D.M.S. of two divisions in France, that when he has heard staff officers declare a particular A.D.M.S. "difficult to manage," he has considered that a great compliment had been paid to the administrative medical service. He observes that the higher the discipline of a unit the more efficiently is its sanitation carried out, and that sanitarily the best conducted troops are the Guards. He further notes that to avoid "a medical breakdown" after an action, the A.D.M.S. must secure information in advance from the headquarters staff. For he is always working with a rope round his neck, and when the medical breakdown comes, as come it will, it is he who will be "hanged," so he had better get this delaying of information removed before the breakdown it is rendering inevitable occurs.—The same issue of the journal contains an interesting account by Lieutenant-Colonel E. L. Munson of an outbreak of measles, occurring in a military camp in Texas, in which the author lays stress on the respiratory symptoms.

Archives de Médecine Navale.—In the issues of this journal for June and July Dr. René Potel, médecin de 1re classe of the French Navy, gives an account of an epidemic of typhus fever amongst Serbian soldiers and the Frenchmen who associated with them in February and March, 1916. On Feb. 1st 2400 Serbian soldiers, who had escaped from Serbia after many hardships, were embarked at Corfu in the French transport *France IV.* for Tunis. There was neither time nor opportunity to clean them before embarkation, nor even to give them clothing, and they came on board in their rags. On Feb 12th cases of typhus began to appear among the French sick-berth staff; in all, 14 of the ship's company were attacked. These men were on arrival sent to the naval hospital at Bizerta, where they, being few, were completely cleaned and no further cases occurred. The 486 Serbian cases were sent to Sidi-Abdallah, near by, where emergency hospitals had been prepared for them, but as they arrived in scores and hundreds little could be at once done beyond washing them and putting them into clean clothes; they were not like the others shaved and so freed from nits, and 21 days after their arrival cases of typhus began to appear amongst the medical officers and the orderlies. This period of 21 days was occupied, it is suggested, three days of it in the hatching of the nits and the development of the parasites therefrom, eight days in the maturation of the cause of the infection within these young parasites, and ten days in the incubation of the fever in the bitten human patient. Ten days after there had been time to work over all the patients, to get them shaved completely, and their bedding disinfected, no more cases occurred. The cases amongst the Serbians were numerous but mild; those amongst the French few but severe. Dr. Potel observes that the sanitary measures employed were directed against lice only, and that they brought the epidemic to an end. Whence he concludes that

it is by lice and by lice only that the fever was spread. The measures taken became more rigid as time went on. At first men were allowed to keep their purses and tobacco-pouches, but later they had to leave all their possessions behind. As to diagnosis, Dr. Potel notes that this is at first difficult, as there is so much resemblance to enteric. The temperature, however, is high and steady without the marked morning remission of typhoid fever; beside the cutaneous rash there is a blue punctate rash on the congested soft palate, there are headache, wakefulness, abolition of the superficial reflexes, and a hebetude which may by persistent provocation be changed to irritation. During convalescence, it may be said, the pre-existence of typhus is shown by exaggeration of the deep and loss of the superficial reflexes, great wasting, poor sleep, and nocturnal pains in the legs. In doubtful cases the injection of 40 minims of the patient's blood, intraperitoneally, into a guinea-pig will produce in ten days the characteristic symptoms. Dr. Potel was very fortunate in being able to get an antityphus serum from Dr. Nicolle apparently (it is not definitely stated) the non-centrifuged serum of an ass carefully immunised.[1] Of 3 cases without serum 2 died; of 31 treated by serum, cases equally grave, all but 1 recovered. The devoted work of the French medical staff who suffered so heavily in their splendid work for the refugee Serbian soldiers is made clear in the report, from which it also appears that if the embarkation at Corfu had been definitely delayed and spread over two days, while the Serbians were in turn being washed and shaved and embarked, and having their clothes boiled, this epidemic would have been much lighter. We learn that a medical officer stood out against receiving the Serbians till these things were done, and if he had had his way his orderlies would have been saved from disease, and his country from much unnecessary expense.

Reports and Analytical Records
FROM
THE LANCET LABORATORY.

TOILET LANOLINE (WELLCOME BRAND).

(BURROUGHS, WELLCOME AND CO., SNOW HILL BUILDINGS, LONDON, E.C. 1.)

THE curious characteristic of dry wool fat of readily emulsifying into a uniform cream with water renders it a valuable skin application. Hydrous lanoline is thus easily absorbed by the skin, rendering it supple and smooth without leaving a greasy impression. The sample submitted to us contained, according to our analysis, exactly 30 per cent. of water, while it was entirely free from mineral matter. On heating, the creamy mass melted and the water and wool fat separated, and after a time a clear yellow oil remained. It is pointed out that while this preparation is primarily intended for toilet use it is also suitable for application in many skin conditions, particularly as the wool fat employed is highly refined. It is delicately perfumed.

JARDOX.

(JARDOX LIMITED, CRYSTAL PALACE WORKS, ANERLEY, LONDON, S.E. 20.)

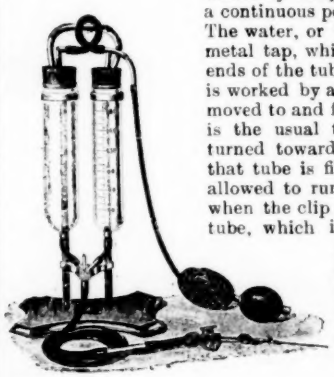
Jardox is a viscid meat expression which, in addition to the ordinary extractives and bases of meat, contains a notable proportion of finely divided fibrin, as well as coagulable albumins. On analysis the following results were obtained: Moisture, 35·00 per cent.; total meat derivatives, 55·30 per cent.; mineral matter, 9·70 per cent. The meat derivatives were made up of 50 per cent. extractives and bases, and 5·30 per cent. of fibrin and albumin. The presence also of a notable proportion of proteoses was confirmed, inasmuch as a material yield was obtained on the addition of saturated ammonium sulphate solution. The mineral matter was chiefly salt and potassium phosphate. The flavour is agreeably "beefy" and not too rich. Besides its stimulating properties, this preparation provides a definite food value due to proteoses, fibrin, and albumin, which renders it useful for invalid purposes and also for general use as an emergency restorative.

[1] THE LANCET, 1916, i., 1187.

New Inventions.

A ONE-MAN "606" APPARATUS.

THIS apparatus is easily portable, easily taken to pieces for sterilisation, easily rearranged, and all the parts can be replaced; and it is safe. There are two vertical glass tubes connected above by corks to an ordinary spray bellows, which by frequent compression give a continuous positive pressure within. The water, or "606," runs through a metal tap, which is connected to the ends of the tubes by rubber; the tap is worked by a handle, which can be moved to and fro at will—beyond this is the usual tube. The handle is turned towards the water-side, and that tube is filled up and the water allowed to run until it is free of air, when the clip is closed. The "606" tube, which is divided into 30 c.c. and subdivided into 10 c.c., is then filled with one or more doses, the corks firmly put in and the air pressure fully raised, and, the corks holding, the operation can be started. Directly the vein is entered the water runs down the glass and the handle can be then switched on to the "606" and the measured quantity allowed to run in. The "606" is then turned off, and it is washed in by the water till the colour disappears in the window. On the first occasion I gave 22 injections, and I have always found it to work well, and since then I have given 41 in an hour. The left hand must always be on the needle and the right hand free to move the handle, &c.

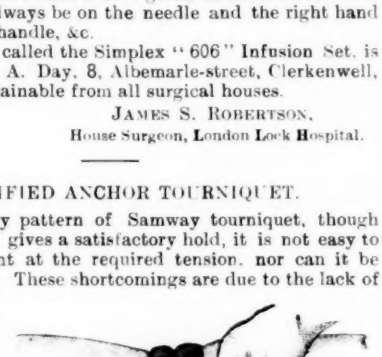


The apparatus, called the Simplex "606" Infusion Set, is manufactured by A. Day, 8, Albemarle-street, Clerkenwell, E.C. 1, and is obtainable from all surgical houses.

JAMES S. ROBERTSON,
House Surgeon, London Lock Hospital.

A MODIFIED ANCHOR TOURNIQUET.

IN the ordinary pattern of Samway tourniquet, though the anchor catch gives a satisfactory hold, it is not easy to fix the instrument at the required tension, nor can it be rapidly detached. These shortcomings are due to the lack of any part of the apparatus upon which a firm purchase can be obtained. To provide this I have had a handle added in rigid continuity with the anchor. The form is sufficiently shown by the illustration. It will be found that a tourniquet fitted with this modified anchor can be readily applied at any tension and can be rapidly detached, even when out of sight. The pattern shown has been made for me by Messrs. Allen and Hanburys, Wigmore-street, W.



C. MAX PAGE, M.B., M.S. Lond.,
Captain, R.A.M.C. (S.R.).

PRESENTATION TO A MEDICAL MAN.—Mr. F. C. Fitzgerald, who has been dispensary medical officer of the Newtownbutler district of co. Fermanagh for the past 40 years, has been presented by his patients with an illuminated address and a cheque for £350, his wife receiving a gold watch.

THE LANCET.

LONDON: SATURDAY, OCTOBER 20, 1917.

Success and Failure in the Treatment of Tuberculosis.

GLOOM has fallen on the treatment of tuberculosis, at all events in the public mind. The keen hopes raised by the open-air methods introduced from Nordrach, by the Edinburgh dispensary scheme, and by the Frimley graduated exercises have died down. During the years when these pioneer methods were being worked out the death-rate from tuberculosis was falling steadily from year to year, and although critics were not wanting to point out that this fall in death-rate was nothing more than a continuation of the steady fall already in progress during the last half century, and even possibly the diminution of this rate, yet the feeling was widespread that a new and hopeful era in the treatment of tuberculosis had been introduced. How different is the position now. Sanatorium treatment is regarded by many as having failed in its promise and succeeded merely in interposing an interval of improvement in the inevitable course of a fatal disease. The death-rate from pulmonary tuberculosis has risen during the last three years in a way which no thoughtful person can overlook. The figures from headquarters are given in another column by Sir ARTHUR NEWSHOLME, who adds an instructive table of the rate for the last three years in comparison with the favourable year 1913. Both 1915 and 1916 show a 12 per cent. increase on 1913 in the death-rate from pulmonary tuberculosis, and it must be remembered that in a slow disease like tuberculosis the death-rate is rather a clue to conditions prevailing in previous years. The discouragement extends to all the schemes set in motion on the recommendation of the Departmental Committee on Tuberculosis in 1912; in spite of a vast amount of trouble and administrative machinery we have not kept pace with the disease. The tendency is a natural one to regard the whole of this machinery as useless and to wish it scrapped for something better. The contrast is so vivid between apparent administrative failure in regard to tuberculosis and the dramatic success achieved in stamping out enteric fever by means of prophylactic measures, that increasing pressure is being brought to bear on authorities to treat tuberculosis as a contagious disease and the sufferer from tuberculosis as a social pariah to be isolated from his fellows.

It may not, therefore, be out of place, even at the risk of wearying the well informed, to return once more to the essential difference between the course of tuberculosis and that of strictly limited acute infections. As the late W. R. HUGGARD acutely observed, the dead-house has no bias, and the observations of NÄGELI on the prevalence of tuberculosis in hospital autopsies at Zürich have never been challenged. Quite recently his figures have been confirmed from another pathological institute in Switzerland by Dr. A. REINHART,[1] who found in a series of 360 consecutive autopsies only 13 bodies which did not afford evidence of previous infection with tubercle. This indicates that 96 per cent. of the ordinary hospital population of Berne, a bleak but not unhealthy city, have had tuberculosis, and of these only 32 had progressive lesions at the time of their death, while 64 per cent. had healed foci consisting merely of calcified scar tissue. Dr. REINHART cautions his readers that the result of hospital material must not be applied to the generality of mankind without due consideration, and that the post-mortem material of the war will alone afford conclusive evidence of the extent of tuberculisation; but his conclusion is unassailable that tuberculosis is acquired and recovered from without treatment by a vast majority of civilised people. This stamps it at once as a social disease which cannot intelligently be dealt with on the lines of acute epidemic disorders. The Departmental Committee, recognising this, set in movement a vast social organisation to deal with tuberculosis, and the question which must be asked is whether this herculean labour has shown any commensurate results. The answer is emphatically that neither material for proof or disproof is yet available. Sir ARTHUR NEWSHOLME tells us that in 1911 there were 1300 beds available for the institutional treatment of tuberculosis and about 25–30 tuberculosis dispensaries in action. During the two years following many local authorities were persuaded to establish tuberculosis schemes. Then came the war, which put a stop at once to the realisation of any schemes recently initiated and prevented the full working out of those already in action. But the war did more than this. It brought with it precisely those factors known to have a harmful influence on tuberculosis. Obviously the restriction of food supply, which has had such a terrible influence in Belgium and the districts of France in German occupation, has not been a widely felt influence in this country, but the results of mental stress and physical strain have been the same, although in less measure. With regard to the fighters themselves, it was contended with some show of probability that the free open-air life of the trenches, with abundant food and exercise, might exert a favourable influence on the course of tuberculosis acquired in town life. In the full light of his official knowledge Sir ARTHUR NEWSHOLME says No. A few consumptives have been able to withstand the strain of active warfare, the majority unfortunately have broken down, and he adds that the records already show a material national increase in tuberculosis due to the war.

The position, then, is this. Tuberculosis is being given a new start while the measures for its control

[1] Anatomische Untersuchungen über die Häufigkeit der Tuberkulose (from the Pathological Institute at Berne). Corresp. f. Schw. Aerzte, Sept. 8th, 1917.

are handicapped. And yet another factor tells in favour of the disease on which insufficient emphasis has yet been laid—viz., the restriction on ventilation caused by the Home Office lighting regulations. More than 12 months ago Dr. S. DAVIES, of Woolwich, attributed the increased incidence of tuberculosis and other respiratory diseases in Woolwich to this cause. The habit of the fresh-air life, an essential part of the tuberculosis campaign which was just beginning to take hold of the nation as a whole, has received an incalculable setback by the insistence on closely screening windows. But there is in all this no cause for depression. The mechanism of tuberculosis control is good and only requires to be properly applied. The work of the tuberculosis dispensaries of our great cities and such an organised system of control as that under the direction of the Chair of Tuberculosis at Edinburgh are on the right lines. Sir ARTHUR NEWSHOLME is most helpful when he points out the defects of these efforts and their appropriate remedies. On the side of the patient the harm comes from delay in applying for treatment until the disease is fully established and his unwillingness even then to accept sanatorium treatment: neglect and concealment are still potent factors. On the side of the practitioner is the difficulty nowadays of devoting the time necessary for early diagnosis, and a certain unwillingness to refer doubtful cases for consultation to the tuberculosis officer. Against the work of the tuberculosis officer is the insufficient staff available for the new service, and the number of experienced assistants is now reduced almost to a vanishing quantity by the war. No serious progress can be made without close coöperation between these three essential links in the chain of administrative control—the patient, his doctor, and the tuberculosis officer. In certain places where the coöperation has been complete the success of dispensary treatment has been such that undue emphasis has been laid on such minor adjuvants as the administration of certain remedies. With the return to normal conditions after the war, with the more complete training of the tuberculosis officer, and greater coöperation with the general practitioner, the administrative control of tuberculosis will come into its own.

The Problem of the Insane Sailor and Soldier.

OF the various after-the-war problems already beginning to attract public and professional attention that of the future of Service men who have become insane or otherwise mentally afflicted is not one of the least important. It may be taken for granted, in general terms, that the Government and the country desire that all who have broken down while wearing the King's uniform should be treated justly and even generously. For there is a feeling that in dealing with those who have suffered most, and who are unable to do anything further for themselves, any error that is made should be on the side of generosity. To those acquainted with the handling of the nervous and mental wreckage of warfare on land or sea the inadequacy of the accommodation at present provided has long been noticeable. Certain institutions admitting mental cases from a command of wide limits have been more or less crowded out. Nor are the numbers of such cases likely to diminish for some time yet. Further, a large number, the approximate percentage of which it is at present impossible to gauge, will pass into the category of the chronic or the incurable.

From a letter which we publish in another column it will be gathered that the official suggestions, accepted by the Board of Control, for the disposal of such cases are already meeting with criticism. It will be seen that the Government propose to provide the required accommodation in the ordinary civilian pauper asylums, with an allowance of 3*s*. 9*d*. above the pauper maintenance rate. A mild attempt at further distinction from the pauper insane is to be effected by resort to the term "Service patients"; and by a recent order every military case is regarded as a private patient, to be paid for by the Ministry of Pensions until his status has been determined. We do not know whether in such institutions the "Service patients" are to be kept in separate blocks or not, although we cannot suppose, as Dr. J. F. GEMMEL seems to hint, that they may not be segregated even from the criminal insane. One of the objections to such suggested treatment is undoubtedly associated with the fact that in the lay mind there is a stigma attached to insanity and asylums. The persistence with which this keeps cropping up is such that it cannot be dismissed airily from consideration, absurd though it may be and is. The public have not yet learned that mental disease is nervous disease, or that mental symptoms may be the outcome of pathological processes in the brain whose occurrence elsewhere, say in the liver, would never be regarded with distress or spoken of with bated breath. It is a commonplace of practice that the average family will do anything to avoid the certification of the insane relative; and Dr. GEMMEL appears to welcome the possibility of saving the "Service patient" from "at least documentary evidence of insanity," though he would, of course, admit this can make no difference to the medical facts of the case. While, however, the public is not yet educated to regard insanity through the spectacles of the physician, the question of avoiding certification as far as practicable is not to be ignored, especially as the sentimental side of the matter also demands consideration. By this we mean that there is something repellent in the idea that some of the men who have fought for us should as a consequence spend the rest of their lives in a lunatic asylum. Elaborate schemes are on foot to provide homes and blocks of residences for disabled Service men where they may spend their days by themselves in comparative comfort; hundreds, of another class, will be adequately cared for in such places as the new Star and Garter home; yet the only difference between these men and the unfortunate traumatic insane is, it may be

said with reason, that the latter has been shot in the head and the former has been shot in some other part. Is this a sufficient justification for making their futures so different? We scarcely think so. We are bound to give due weight to the sentimental aspect of the problem, though not at the expense of abandoning our professional view that any measures calculated to enlighten public opinion on the unreality of the insane stigma should be patiently emphasised.

Another point arising out of the discussion must not be ignored, especially as we have reason to believe the Board of Control may be in possession of facts not accessible to the lay public. It is impossible in many cases to tell an epileptic patient by merely looking at him, nor will a routine medical examination necessarily reveal the truth. Such men may therefore be accepted in good faith by the authorities, but before they have been in the Navy or Army a week they may develop fits and be transferred to a Service hospital. They have been of no value whatever from a naval or military point of view, and the appearance of epileptic degeneracy may not be far distant, yet meanwhile separation allowances and the usual privileges are granted. It is possible that in some cases medical officers may have been deliberately deceived for the sake of the monetary advantages. Similarly, in the lucid intervals of certain forms of recurrent insanity men may have been accepted, though only by reason of denial on the part of the recruit or his relatives of the facts of the case. Again, certain forms of mental disease, in an early stage, may have been missed by the medical officer for one reason or another. Technically, these patients have become sailors or soldiers, but they have passed through no "extraordinary vicissitudes" to develop their disease; quite the contrary. They have been accepted, but only as the result of the suppression of material data, and we are not inclined to regard any attempt at discrimination between such and the genuinely traumatic insane as sophistry or refinement. There is, at the least, another side to the proposal that all insane Service men should be taken as "Service patients" irrespective of former attacks of insanity, any history of heredity or mental deficiency, or any form of insanity due to syphilis contracted years before the war. We feel it is only fair to the genuine cases that that form of sharp practice which pushes the frankly unfit into the Army for ulterior motives should be exposed, where technical acceptance is due to the holding back of material facts and where the patient's actual service with the colours is numbered by days or even hours. We cannot see that any particular hardship would arise were these cases to be dealt with in the usual routine way of civilian practice. However, we cordially agree with Dr. GEMMEL that only good can come by clearly envisaging these various aspects of a most important question, which calls for immediate discussion with a view to practical measures of an acceptable kind, and in regard to which further pronouncement on the part of the Government will be welcome.

Annotations.

"Ne quid nimis."

THE WAR EMERGENCY FUND OF THE ROYAL MEDICAL BENEVOLENT FUND.

THE aims of the War Emergency Fund of the Royal Medical Benevolent Fund were more precisely defined at their conference last week with members of the medical profession in general. As we have already noted, the chairman described it as a civilian fund to be managed by civilian doctors, and with the principal object of assisting men on laying down their medical commissions to rehabilitate themselves in practice. Including the result of the recent appeal, a sum of £7000 is now in hand, but the immediate objective is a sum of no less than £25,000, with a probability of finding even this insufficient if only 3 to 4 per cent. of the medical men holding commissions prove to need help. It cannot be too strongly emphasised that the War Emergency Fund begins where other funds leave off and that no question of competition or overlapping arises. Proof of this, if proof were necessary, is afforded by the fact that the heads of the Medical Services of both Navy and Army accompanied their regrets for absence at the conference with good wishes for the success of the Fund. Important details of administration rather than questions of principle occupied the main attention of the meeting. Several of those present urged that the Fund should be administered as a loan to be repaid at leisure, and this view gained acceptance in the form: "Take this to start you on your legs again; you can return it whenever you like, with or without interest as you please." Decentralisation for the collection of funds was a second point which met with general approval, a speaker stating that a personal appeal through an enthusiastic local leader, however unknown in wider circles, would attain a better response in any district than circulars from headquarters. The value of the help of Local Medical War Committees in making recommendations arising out of their local knowledge was recognised, while keeping steadily in view the necessity for absolute secrecy. The plan for ensuring this secrecy is the investigation of the case of any applicant by a single officer of the Fund, who places the name on a register accessible only to the executive, the application being dealt with in future as a number only. As on previous occasions, the conference wished it to be made abundantly clear that no question of charity must arise in accepting help from the Fund. Of the 12,000 or more medical men who have received commissions some have undoubtedly improved their financial position, while others, for the most part young men in process of building up practices, have suffered to a serious extent. The War Emergency Fund may well be regarded as a pool from which to equalise the war sacrifice made by the medical profession as a whole in so far as money can redeem the loss. The Fund appeals, in the first instance, to the more prosperous in our own profession, and then to a larger public which recognises its obligation to medical science and skill during the war. Such, in brief, was the message of the meeting, and while the Executive Committee of the Fund remains the same for the time being, a large General Committee of supporters was elected to uphold them in their work.

LOCAL ARGYRIA DUE TO ORGANIC SILVER COMPOUNDS.

THE generalised argyria following the prolonged administration of silver nitrate is well known, and so is the local argyria which follows its local use and also occurs in silver-workers. But the local argyria due to the local use of argyrol and other organic silver compounds is a recent observation. In the *Journal of the American Medical Association* Dr. G. M. Olson has reported the following case:—

A woman came under observation in November, 1916. Four years previously she sustained fracture of the nose with laceration of the soft parts extending to the right lower eyelid. Argyrol was dropped into the eye, and made its way into the lacerated tissue of the lid, nose, and cheek. An unsightly bluish-green and slate-grey pigmentation resulted, for which the oculists were consulted. Bichloride of mercury injections were given and, according to the patient, effected a slight improvement. For two years the condition had been stationary. Dr. Olson prescribed hexamine, 5 grains thrice daily. The condition improved at once, and in two weeks half the area of pigmentation had disappeared. The dose was increased to 10 grains and the improvement continued, but was not so marked. After six weeks the drug proved irritating to the stomach and kidneys and was discontinued. About three-fourths of the pigmentation had disappeared.

The hexamine treatment was discovered by an American practitioner, A. M. Crispin, who published in 1914 a case of universal argyria due to collargol. He gave the patient hexamine for a cold and was astonished to find that the pigmentation became several degrees lighter. Another American, Davidson, reported in 1916 a case of general argyria due to urethral injections of argyrol and protargol. The pigmentation following the application of the organic silver compounds comes on very slowly, but when subcutaneous injections are made the cutis and subcutis are stained at once, and if the skin is thin, as in the eyelids, a bluish-green discolouration immediately becomes apparent. The danger of argyria is not great, provided certain precautions are taken. Intact epidermis and mucous membranes do not take up the silver stain unless solutions are used steadily for a long time. But raw surfaces, such as ulcer of the cornea and burns, from which epithelium is absent, readily take up the stain. In chronic inflammation the epithelium of the mucous membranes also takes up the stain more readily. There is special danger in forcibly injecting the lacrymal duct, urethra, and similar places, as the solution may be forced into the loose connective tissue. Solutions should never be used near lacerated wounds, and patients should not be allowed to use them unsupervised for long periods. The prognosis of general argyria due to internal administration of silver nitrate, in which there is a large amount of silver in the tissues, is almost hopeless. But in local argyria, due to organic silver compounds, the amount of silver present is small, and in some patients the pigmentation disappears spontaneously. Even in occupational argyria, due to metallic silver, the pigmentation occasionally fades spontaneously. Treatment has not proved of much service; the principal remedy has been potassium or sodium iodide given by the mouth. Dr. Olson considers that the hexamine treatment is promising, but so far it has been tried in only two cases. He suggests that it acts by forming a soluble compound with the pigment which is absorbed and probably excreted by the kidneys. Under the treatment the stain should diminish in two weeks. But as it fades slowly the treatment should be continued for months, with intervals, so as to avoid irritation of the stomach and kidneys.

ROYAL SOCIETY OF MEDICINE.

THE Royal Society of Medicine has just issued the calendar for 1917–18, which contains much interesting information on the origin, progress, and work of the society, with a complete list of officers, members of Council, sections, and dates of meetings. With Sir Rickman Godlee as President (the Past-President being Sir Frederick Taylor), the Council has the following list of Vice-Presidents who are also Presidents of sections: Mr. G. Rowell (Anæsthetics), Dr. Preston King (Balneology and Climatology), Dr. H. Morley Fletcher (Diseases in Children), Dr. H. D. Rolleston (Clinical), Dr. J. Galloway (Dermatology), Dr. G. Harrison Orton (Electro-Therapeutics), Dr. G. S. Buchanan (Epidemiology), Dr. Raymond Crawfurd (History of Medicine), Dr. A. Brown Kelly (Laryngology), Dr. A. E. Garrod, F.R.S. (Medicine), Dr. R. P. Smith (Neurology), Dr. G. F. Blacker (Obstetrics and Gynæcology), Mr. J. H. Badcock (Odontology), Mr. W. Lang (Ophthalmology), Dr. H. J. Banks Davis (Otology), Dr. W. Bulloch, F.R.S. (Pathology), Dr. R. P. Smith (Psychiatry), Sir Anthony A. Bowlby (Surgery), and Dr. W. Hale White (Therapeutics and Pharmacology). Dr. W. Pasteur and Mr. H. S. Pendlebury are the honorary treasurers, Dr. Norman Moore and Mr. W. G. Spencer the honorary librarians, and Mr. C. H. Fagge and Dr. J. C. Briscoe the honorary secretaries. The secretary, consulting librarian, and editor of the society's proceedings is Mr. J. Y. W. MacAlister, into whose energetic dispensation of business no sign of this multiple pressure of work has intruded.

OUR DAILY SUGAR.

A SERIES of questions and answers published recently in the *Local Government Chronicle* not only illustrate the difficulties which will beset some members of the public in obtaining their authorised portion of sugar in the coming year but serve to remind us also that the work of the Government department responsible for the nation's first experiment in compulsory rationing has been, and will be, no sinecure. The questions are, of course, those propounded by readers of the periodical containing them, and a considerable portion of them relate to persons who change their residence frequently, in some cases at every week-end, by "going home" or by leaving their homes for change of air. Arrangements, it is stated, are being made for those who thus remove from one registered household to another and for others who, having no fixed address, cater for themselves and are constantly travelling. They will have to form a code of a comprehensive and ingenious character if they combine to satisfy the requirements of the chronic week-ender, of the bachelor and spinster entering the bonds of matrimony after registration, of a mobile anti-aircraft unit, and of "a person who has no fixed abode and lives first with one friend and then with another," all of whom are anxious to know what the future may hold in store for them. We can conceive the last-mentioned nomad being made comparatively welcome in the hospitable circle in which he moves if he were to promise before arriving at each temporary abode that he would contribute his ration to the family stock for general cooking purposes, and abstain from drinking it in tea, coffee, and other beverages. This is a form of economy in sugar which hardly seems to be enough

impressed upon the public by their many advisers in the newspapers and elsewhere. And yet a large number of persons by choice drink no sugar in their tea, and some, perhaps fewer, omit it from coffee also. Many, too, have voluntarily forgone it as a form of "war economy," and we have not yet heard that either class believes that it has suffered in health thereby, as many believe that they have done through eating "war bread." The temporary shortage of tea with which we appear to be threatened will cause far more inconvenience to all than voluntary abstinence from sugar in it, but may have an indirect advantage through compelling an economy in the latter which many housekeepers will welcome. In respect of sugar, however, and of tea alike, we urge upon all cheerful acquiescence in deprivations which are temporary only and are inevitable. Our population suffer in a country which flourished and grew strong long before either tea or sugar was in general use, and which only in a very recent period of its existence has adopted the former as a national beverage.

EPIDEMIC POLIOMYELITIS.

THE central facts in the bacteriology of poliomyelitis have not seriously been called in question, though the claims of certain streptococci to be regarded as the specific cause of the disease have been urged with some insistence by several investigators. These streptococci are frequently found in the central nervous tissues in cases of the disease as seen in man or as artificially produced in monkeys. Recent work seems to show that these organisms must be regarded as secondary infections, since they are unable to produce the lesions of poliomyelitis or to protect against infection by the filtrable virus of that disease, nor do they differ from streptococci isolated from cases of sepsis. Interesting researches on the delicacy of the relation which exists between infection and alterations in the meninges and choroid plexus have been recorded by Flexner and Amoss. The slight alteration which is caused by lumbar puncture and the injection of such physiological fluids as monkey or horse serum, isotonic salt solution, Ringer's and Locke's solutions, promotes infection with the virus of poliomyelitis which has been introduced into the blood or subcutaneous tissues, or swabbed on the nasal mucous membrane. Even so minute a disturbance as the substitution of the cerebro-spinal fluid of one monkey for that of another may, in some instances, promote infection, as does also simple lumbar puncture if attended with the slightest hæmorrhage. The same observers found that the intrathecal injection of normal horse serum in protected monkeys caused the passage of protective substances from the blood of the injected animal into the cerebro-spinal fluid. There are still many lacunæ in our knowledge of the spread of epidemic poliomyelitis, but some light is thrown upon the irregularities by the discovery that a material is present in the nasal and pharyngeal mucosa of man which can inactivate or neutralise the active virus, and that this power is not found in all cases or at all times in the same individual. The poliomyelitic virus has been shown by Flexner to survive in glycerol for at least six years. Though much work has been done on the part played by insects in the epidemiology of the disease the evidence as to their importance is still of the slightest.

NUTRITIVE VALUE OF BUTTER SUBSTITUTES.

AN important point in connexion with the comparative dietetic values of butter and butter substitutes is raised in an interesting paper on the subject appearing in the September number of the *Journal of Physiology* by W. D. Halliburton and J. C. Drummond. For the purposes of the investigation the butter substitutes were divided broadly into three classes as follows: (1) Animal-fat margarines (the higher-priced margarines); (2) vegetable-oil margarines (the cheaper forms of margarine); and (3) nut butter, a class of product forming a comparatively insignificant fraction of the butter substitutes consumed in this country, and which the authors state is prepared exclusively for the use of vegetarians and consequently has a limited sale. The experiments were made on rats, but the belief is expressed that the results have a direct bearing upon the dietary of the growing child. This belief is, of course, well founded, since experiments on rats have been fruitful in indicating particularly the importance of the presence of accessory growth substances in the dietary. As the net result of their investigations the authors conclude that (1) the fat-soluble accessory growth substance (vitamine) is present in beef-fat and "oleo-oil," and is present in margarines prepared upon such a basis. Such margarines, the authors consider, are nutritively the equivalent of butter. (2) Coconut oil, cotton-seed oil, arachis oil, and hydrogenated vegetable oils contain little or none of this accessory substance, and hence margarines prepared with a basis of these fats have not an equal nutritive value to that of butter. (3) Nut butters prepared from crushed nuts and vegetable fats are similarly not equal to butter; while (4) lard substitutes prepared from vegetable oils are equal to lard in their nutritive value, but both alike are destitute of the fat-soluble accessory substance. In a well-balanced diet the deficiencies pointed out may not be a serious matter, as so many articles of food carry accessory substances, and so a compensation is obtained. Curiously enough, this compensation is found in the present war bread, as was pointed out in our columns last week. Thus, while the Government regulation bread contains less starch than wheat flour, it is decidedly richer in every other constituent, and particularly in regard to accessory growth substances and phosphorus. The importance of a balanced diet is again emphasised in an admirable pamphlet on "Food and How to Save It," by Dr. Edmund I. Spriggs, published last week by His Majesty's Stationery Office. This consists of a series of articles already issued by the Ministry of Food, which are written in such simple terms as to afford a valuable and instructive guide to the general public. The fact, however, that some of the fats available to the public are deficient in certain essentials should be carefully considered, as doubtless amongst the poor the fat dietary is largely based on cheap vegetable oils. As Professor Halliburton and his co-worker, Mr. J. C. Drummond, point out, it would be truer economy even for the poor to purchase smaller quantities of an oleo-oil margarine if they cannot afford the luxury of real butter. But we should like to ask, Are vitamines so difficult to prepare as to exclude the practicability of adding them to accessory-free fats, so making up for the deficiency? This question might well receive the careful attention of our food authorities as well as the manufacturers of inactive butter substitutes.

ICTEROGENETIC SPIROCHÆTOSIS.

Professor Umberto Carpi[1] has had opportunity for investigating over 300 cases of epidemic jaundice occurring in two base hospitals during 1916 from the Isonzo sector. The epidemic, which made its appearance with a few sporadic cases at the end of 1915 and reached a high figure in the following January, died out from March to June, and attained its maximum intensity from August to December, 1916. There was a strict parallel between the epidemic of camp jaundice and sporadic cases among the troops in garrison. Several interesting facts in Professor Carpi's observations deserve notice. He found that the period of incubation was usually 15–20 days, and in some cases 25–30 days or longer, and the question arises whether the disease may not have a still longer incubation period or whether cases of this kind are the result of infection in hospital. He found that inoculation of the virus in a guinea-pig could give rise to a latent infection capable of manifesting itself only after a long period, in one instance as much as 131 days, and he therefore inclines to the view that in man also there may be a long period of incubation and latency of the infection, and that many of the cases arising sporadically may represent the active phase of an infection contracted some time previously at the original infective focus and slowly developed. A further interesting point is the result of the blood examination in Professor Carpi's cases. In the initial period of the disease there was a polynuclear leucocytosis and in some severe cases myelocytosis with erythroblasts. In the later stages the polynucleosis gave way to lymphocytosis with eosinophilia. These peculiarities may afford a differential diagnosis between spirochætic jaundice and certain forms of typhoid and paratyphoid infection which are characterised by leucopenia with lymphocytosis. Serological investigations from the point of view of the differential diagnosis between spirochætal and typhoid or paratyphoid infections also afforded results worthy of mention. Out of 112 cases it was found that a positive agglutination with typhoid and paratyphoid A was very rare, but somewhat less so with paratyphoid B. These results in individuals recently vaccinated do not lend much support to the theory of Frugoni, which attributes the greater part of cases of epidemic camp jaundice to paratyphoid infection. None of the cases under observation showed any clinical affinity with either typhoid or paratyphoid. Good therapeutic results were obtained by the administration of mixed mercurial and arsenical preparations, as evidenced by the prompt diminution of jaundice, lymphatic gland enlargement, and tumefaction of liver and spleen. Even during the febrile period no harmful results ensued from their administration, neither was albuminuria unfavourably affected.

As we go to press the Conference of Representatives of Local Medical and Panel Committees has begun its deliberations in regard to the important matters at issue between insurance practitioners and insurance committees.

AT its meeting on Monday last the National Council for Combating Venereal Diseases ratified the resolution of its Executive Committee to refrain from recommending artificial prophylaxis.

[1] Il Policlinico, Practical Section, July 29th, 1917.

THE CONTROL OF VENEREAL DISEASES

SOME PRACTICAL POINTS IN INTRAVENOUS MEDICATION:

WITH SPECIAL REFERENCE TO THE INJECTION OF ARSENO-BENZOL PREPARATIONS.

BY H. W. ABBOTT, M.R.C.S. ENG., L.R.C.P. LOND.

THE treatment of syphilis by the intravenous injection of salvarsan or one of its substitutes is becoming daily of more and more frequent occurrence, and, most probably, in the near future, will be the one recognised method of combating this disease. In the vast majority of cases the sufferer applies to the general practitioner for advice, and thus it will inevitably become necessary for him to gain proficiency in intravenous medication in order to be able to give his patients the benefit of this, the latest, and probably the best, means of treatment.

The operation, though requiring a certain amount of skill, should not be beyond the ability of anyone who cares to give a little time and thought to learning its technique, and it is with the hope of smoothing away any difficulties which may have been encountered that I have ventured to write this paper. It is in no wise intended for the specialist, but for that large branch of our profession, the men in general practice, many of whom have probably not had the opportunity of attending any of the post-graduate courses on venereal disease. Much of the subject matter of this article has been obtained from personal observation and experience, but a certain amount is based upon, and follows, the teaching of Lieutenant-Colonel L. W. Harrison and Mr. (late Captain) C. H. Mills, of the Military Hospital, Rochester-row, London, S.W., to whom my indebtedness is gladly acknowledged.

There are several methods employed in passing a needle into the lumen of a vein, but in the present paper I shall confine myself to describing one which is very frequently adopted and which is perhaps, on the whole, the best. Certain preliminary conditions are, however, common to all methods, and much of the success of the operation depends upon the precise fulfilment of these precedent requirements. Thus, the patient must be properly prepared, he must be placed in a definite position with regard to the source of light, the skin must be fixed near the site of the injection, &c.

Preliminary Considerations.

First, then, it will be as well to consider these preliminary conditions upon which success so much depends.

(*a*) *Preparation of the patient.*—This should be very similar to that required for an anæsthetic. The patient ought to have fasted for at least six hours previous to the intravenous injection, otherwise there is a great liability of his vomiting during or immediately after the operation. A smart saline purge is to be given on the previous day, and he should be instructed to avoid drinking much fluid during the 12 hours immediately preceding the injection and to abstain altogether from taking liquids for the last six hours. Thus the tissues have lost a good deal of moisture, they are physiologically "thirsty," and simply "mop up" the arsenic from the blood stream after it is injected much to the detriment of the health of the *Spirochæta pallida*, the micro-organism which causes syphilis.

FIG. 1.

The dotted line shows the course of the vein as seen before puncture of the skin. The arrow indicates point of the needle in the overlying skin. The firm line illustrates the displacement of the vein caused by the thrust of the needle though the unfixed skin.

(*b*) *Fixing of the skin.*—Fixation of the skin, the essential feature of which is that it immobilises the subcutaneous vein, is one of the most necessary factors of success. If this be not done the thrust of the needle as it traverses the skin will most probably displace the vein laterally and longitudinally—i.e., it will produce a kink in it (Fig. 1). I need hardly remind the reader that it is extremely difficult to place the bevel of a needle within the lumen of a kinked vein. The skin is fixed by pressure exerted on its surface. It is convenient to use for this purpose the second and ring

fingers, slightly separated, of the left hand; but any digit will serve, the thumb in certain positions being extremely useful. The pressure should be exerted at a spot about 3 inches nearer to the hand than the site of the puncture; this leaves sufficient room in which to work. In fixing the skin, do not drag the vein towards either side, but just pull the skin slightly down towards the hand, exactly in the same direction as the course of the vein. The integument is thus put gently on the stretch, but enough force must not be used to obliterate the lumen of the vein. Now press the skin upon the subcutaneous tissues sufficiently firmly to counteract the thrust of the needle.

(c) *Position of the patient.*—Until fairly recently it was considered necessary for the patient to lie down during an intravenous injection of salvarsan or one of its substitutes, and this recumbent position was maintained for some 24 hours subsequently. It has been shown, however, at the Military Hospital, Rochester-row, that such procedure is an unnecessary precaution. Many hundreds of injections have now been given while the patients have been seated in a chair. Moreover, at the conclusion of the operation they have been free from restraint; neither has there been the slightest cause for anxiety arising therefrom. In private practice the fact that our patient can be sent away immediately after the operation is completed very much simplifies the matter. Let the patient therefore sit on a chair placed alongside a narrow table about 3 feet wide and of a convenient height. He is thus sitting sideways close to the table, over which a couple of sterilised towels are placed, and upon these the patient lays his arm. It will be seen that, by reversing the position of the chair, either arm can be used for the injection. There should be ample light coming towards the surgeon. To ensure this the table is placed near a window, and the chair will be along that side which is nearer the source of illumination. Make the patient lean well back in his chair and a flood of light will stream along the arm, showing up, like thick cords, the prominent distended veins.

(d) *The tourniquet.*—The arm having been bared, a length of rubber tubing of 18 inches is applied above the elbow as a tourniquet, a piece of lint first being placed round the arm to take the immediate pressure of the tubing. Put the rubber on the stretch as it is used and make it tight enough to constrict the veins, but not to obliterate the radial pulse. Commence by placing the middle of the tourniquet behind the upper arm. Bring the two ends to the front, looping one end under the other to keep the tourniquet in position. The loop is easier to undo than a knot, simply requiring to be pulled. Now instruct the patient tightly to clench his fist. If in doing this there is a tendency to flex the forearm, put a roller bandage under the back of the wrist, and press the fist down over this so as to keep the arm straight.

(e) *Position of the surgeon.*—When passing a needle into the interior of a vein one can often see the course of the vessel better by looking somewhat horizontally along the arm rather than vertically over the top. In this way the course of the veins appears very like the metals of a railroad when looking along its track. The position the operator assumes is somewhat like that which a billiard player adopts when making a "shot."

(f) *The needle.*—The best method of holding the needle is to grasp its shoulder between the thumb and first finger of the right hand, if an ordinary instrument, say a Weintraud or a Record, be employed. A much more sensitive touch can be obtained by this method than by holding the instrument in any other way. The writer, however, always uses a needle made for him by the Holborn Surgical Instrument Company, Limited, of Thavies-inn, London, E.C. It has a handle placed on the upper surface of its mount and over the centre of gravity of the instrument, thus giving a perfect sense of balance. In practice it is held by its handle, when it will be found that the "grip" so obtained imparts to the instrument a greater delicacy of touch than has hitherto been possible and the surgeon can, with the utmost ease, give to the point of the needle every gradation of movement which may become necessary in order to ensure its entry into a vein. (Fig. 2.) The bevel of the

FIG. 2.

needle used for its intravenous injection should not be as long as that of a needle ordinarily used for serum work, because it is necessary that the whole of the bevel be in the vein. If, however, the bevel be very long, there is the possibility of its being partly within and partly without the blood stream. Another point to note is, that the bevel ought not to be ground straight, but should be concave, because this shaped edge more easily picks up the vein wall. (See Fig. 3.)

(g) *The site of the injection.*—In the writer's opinion the best vein to select for the injection is the radial, and at a point some three inches below its junction with the median cephalic. Here the radial vein lies over a convexity, so that the operator is not working in a hollow, which is frequently the case, especially in fat arms, when one of the veins at the bend of the elbow is selected. Further, the radial is one of the most immobile veins in the arm. It is also straight and fairly long. In selecting a vein it is

FIG. 3.

not wise to choose one of the largest, because a clot sometimes forms after the injection, and it is as well not to risk a clot in one of the main channels. Again, if a vein of medium size is chosen, we still have the larger ones to fall back upon if we fail successfully to pass the needle into the first vein. Before passing the instrument make quite certain, by rolling the selected vessel between the finger and the subcutaneous tissue, that there is not a thrombus from a previous injection. If there should be one, then select another vein. Clean the needle well before using it, or you may leave a black puncture mark, caused by oxide of iron, which is irremovable.

(h) *Methods of producing venous turgescence.*—Sometimes the veins of the arm, notwithstanding the application of the tourniquet, do not stand out so prominently as desired, and, in order to achieve this most helpful condition, the surgeon may employ any or all of the following methods:—1. Hang the arm down for a couple of minutes, at the end of which time apply the tourniquet while the arm is still dependent. 2. Subsequent to the application of the tourniquet, swing the arm round like a windmill for a dozen times. 3. After the tourniquet has been applied, make your patient clench and unclench his fist several times. 4. Give the arm half-a-dozen really sharp slaps—enough to redden the surface. This manœuvre frequently causes the veins to become tense with blood, probably through reflex stimulation. 5. Massage the arm from the wrist to the elbow. To do this, separate widely the thumb from the rest of the hand, and apply the concavity thus formed to the convexity of the surface of the arm. Then rub firmly upwards towards the elbow for half-a-dozen times. The operator will be surprised at the result unless he have already practised this movement. 6. Soak the hand and arm in water as hot as can be borne for ten minutes. Then apply the tourniquet. The limb can be conveniently soaked in hot water by means of an enamelled pail.

Insertion of the Needle.

Having thus disposed of the preliminary considerations, we now come to the actual injection of the drug. The skin having been fixed, hold the needle very nearly flat—i.e., very nearly parallel with the plane of the skin, and likewise in the direction of the vein and immediately over its "crown," by which, of course, is meant the centre or highest point of its track. With one movement pass the needle, bevel upwards, through the whole thickness of the skin and proceed onwards subcutaneously for half an inch.

It has been stated by some authorities that the "eye" or bevel of the needle should be downwards—i.e., towards the

FIG. 4.

vein; but you will find that the needle is much more easily passed through the skin, and it picks up the outer wall of the vessel much more readily when its bevel is turned upwards away from the vein. Indeed, the bevel of the needle is very like the edge of a carpenter's plane, and should be directed similarly towards any object it is intended to cut. (See Fig. 4.) The point of the needle is now in the subcutaneous tissue between the skin above and the vein below and lies immediately over the vein. At this stage it is very important to define the position of that portion of the needle which is under the skin. Without knowing this the inexperienced operator is very liable blindly to plunge about in the subcutaneous tissues, often traversing the vessel, and in any case failing to get the bevel of the instrument into the venous blood stream. In order to determine the position of that portion of the needle lying subcutaneously, lift the needle bodily up away from the deeper structures towards the surface of the skin and depress the shoulder slightly. This movement reveals

the exact situation of the whole of that portion of the needle under the skin, because, in bodily lifting the instrument up, you have stretched the skin tightly over it, and thus its position is accurately marked.

Now look for the vein and note its course with your eye or feel it with your left hand. If by any chance the point of the needle be not lying over the centre of the vein, alter subcutaneously the position of the instrument so that the point does occupy this situation relative to the vein. Refix the skin if you have released your hold in order to search for the vein. Then simply depress the point of the needle sufficiently to engage the wall of the vessel, but not enough to traverse it, and push gently and steadily along the course of the vessel; the needle *must* pick up the vein, and as you proceed you will feel a sudden "give" in the resistance, a sudden relaxing of the tissues as the needle enters the vessel, and on looking at the end blood will be seen to be flowing. Sometimes a distinct "click" is heard as the needle pierces the vessel wall. It often takes, however, an appreciable time, something like two or three seconds, for the pressure in the vein to force the blood backwards through the narrow lumen of the needle and flow out at the other end. Therefore, do not be in too great a hurry to decide that the bevel of the needle is not within the interior of the vessel.

Another phenomenon which will be noticed is the formation of a dimple in the skin, a little distance behind the point of the needle. This occurs at the instant when the needle first impinges upon the vessel wall and the mechanism of its production is as follows: When the needle, as it is gently pushed onwards, first reaches the vein, it does not immediately pierce it, because the actual tip of the needle is really the apex of a triangle, the sides of which are formed by the bevel. Now these sides, diverging from the apex, offer a certain amount of resistance to the passage through the coats of the vein. Thus the first result of the impact of the needle against the vessel wall is to push it onwards. The vein is, however, connected to the skin by the subcutaneous tissue, and as the vessel is pushed in front of the needle it drags the skin after it. Finally, however, the needle pierces the coats of the vein, the vessel slips back, the tension between itself and the skin is released, and the dimple disappears. The formation of this dimple in a good "rallying point" in the operation of intravenous medication. It does not always occur, especially if one is using a fine needle with a very sharp point, or if the instrument is thrust into the vein by "stabbing" at it. There is then very little pushing of the vessel in front of the instrument.

The formation of the cutaneous depression ("the dimple") is diagrammatically illustrated in Fig. 5.

FIG. 5.

It is often found that after the application of the tourniquet to an arm practically devoid of fat the veins present immediately beneath the integument—i.e., that there is no pad of subcutaneous tissue between the vessel and the skin. In such patients the operator will find that as soon as he has passed the bevel of the needle fairly through the whole thickness of the skin the instrument is already within the venous blood stream, the skin and the closely applied vessel having been punctured practically at one and the same time.

As soon as the blood is definitely and continuously flowing from the end of the needle the tourniquet can be removed and the instrument connected with the apparatus which the practitioner is using for the injection of the drug.

The one certain indication that the bevel of the needle is within the lumen of the vein is blood issuing from the end of the instrument. In order to prevent contact with the patient's skin I have found it useful to place a piece of lint soaked in 1 in 1000 hyd. et potassii iodidi over the arm at an appropriate distance from the puncture, which thus absorbs the extravasated blood. If there be no blood escaping from the base of the needle, then its bevel is not within the lumen of the vein, unless of course the instrument be not patent. This loss of patency occasionally occurs through a tiny mass of subcutaneous tissue intimately mixed with blood clot plugging the vessel, which condition is sometimes brought about by repeated unsuccessful attempts to pass the needle into the vein. If this sequence of events has happened the surgeon will often notice that, although blood be not issuing from the base of the needle, yet it is leaking a little along the track of the instrument, and appearing at the site of the skin puncture; there is thus a great probability of the bevel of a blocked needle having been passed into the venous blood stream. It is better in such a case to try venipuncture at another spot. Do not withdraw the first needle until the second has been successfully passed, because, when left *in situ*, the needle acts as a plug for the previous puncture in the vessel wall, and prevents, to a large extent, extravasation into the surrounding tissues during turgescence of the veins. To obviate any blocking of the needle by other material, it is wise always to keep a wire stylet in the instrument when not actually in use.

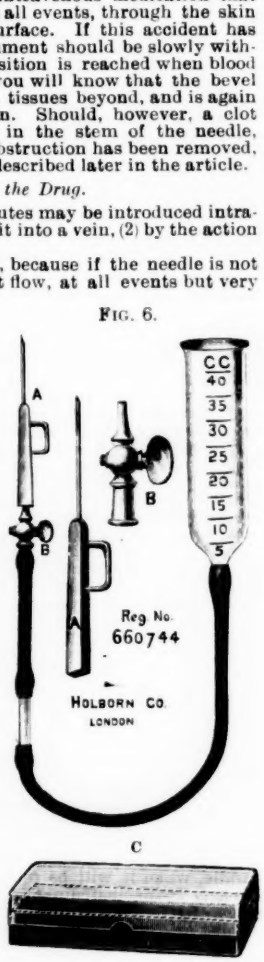
Sometimes, however, blood begins to issue from the base of the needle, proving that the bevel is within the vein, but the flow will cease almost as soon as it has begun. This phenomenon indicates that the needle has completely transfixed the vein, and consequently that the bevel is now lying in the tissues beyond the distal portion of the vessel wall. If this happens it is only possible for blood to flow from the end of the needle during the time that its bevel is passing across the blood stream, as soon as it is beyond the flow stops. It is a sign of faulty technique, the instrument having been held at too great an angle with the plane of the skin. It can scarcely be too strongly impressed upon the operator who is commencing intravenous medication that the needle should be passed, at all events, through the skin very nearly parallel with its surface. If this accident has befallen the operator the instrument should be slowly withdrawn until you find that a position is reached when blood re-commences to flow. Then you will know that the bevel has been withdrawn from the tissues beyond, and is again within the interior of the vein. Should, however, a clot have been formed meanwhile in the stem of the needle, blood will not flow until the obstruction has been removed, the method for doing which is described later in the article.

Injection of the Drug.

Salvarsan or one of its substitutes may be introduced intravenously either (1) by pumping it into a vein, (2) by the action of gravity.

Gravity is the better method, because if the needle is not in the vein the solution will not flow, at all events but very slightly; whereas one can always force, by means of a syringe or a pumping apparatus, fluid into the subcutaneous tissues. At first sight it would seem that if the operator were forcing the solution into the tissues and not into the vein it would be quite easy to recognise the swelling so caused. However, many a good operator has failed to do so, especially in a thick arm, and where the point of the needle is deep, and on the far side of the vein. Moreover, gravity apparatus is simpler, all that is required being a funnel, a length of rubber tubing with a glass "window," and a tap.

FIG. 6.



After a trial of both methods the writer has now come to use exclusively the gravity apparatus, the only drawback to the use of which very simple contrivance is that an assistant is needed.

For the average general practitioner who is, of course, not giving intravenous injections every day the "914" preparations—viz., neo-salvarsan, novarsenobillon, neokharsivan, &c.—are preferable to the "606" preparations, because salvarsan and its substitutes have to be rendered alkaline before they can be used, whereas the others are sent out already alkalinised; moreover, as they are extremely soluble in water there is absolutely no technique required in order to form an alkaline solution. All one has to do is to empty the contents of an ampoule of, say, novarsenobillon into a vessel containing distilled water, solution takes place immediately, and the drug is ready for injection.

Salvarsan has not given me any better results than novarsenobillon, and for many months now I have exclusively used this latter preparation with the happiest effects on the patients. In practice it is dissolved in 20 c.c. of distilled water, with which it forms a perfectly clear yellow solution. The glass funnel (Fig. 6) employed is of 40 c.c. capacity, marked in 5 c.c.'s; the rubber tubing measures 40 inches complete with the window, which is situated 3 inches from the end. To the extremity of the tubing is fitted a Harrison's

tap (B), which makes a perfect joint with the special needle (A) I have devised, or with a Weintraud's needle. This apparatus is very conveniently kept in a strong metal nickel-plated box which has been specially designed by the Holborn Surgical Instrument Company, Thavies Inn, London, E.C., for sterilisation by means of boiling. The box is of such a size that if one does not happen to have a steriliser handy it can be put into an ordinary saucepan. (See Fig. 6, C.)

If the practitioner prefers to use "606" preparations—i.e., salvarsan, kharsivan, arsenobillon, &c.—then the funnel should be of 300 c.c. capacity, because the best dilution of salvarsan is about 1 decigramme to 30 c.c. of water; hence 0·6 gramme will require 180 c.c. to dissolve it, otherwise the technique remains exactly similar. The tubing is emptied of air by allowing saline to run through. This can be very expeditiously accomplished by first lowering the funnel containing the saline until it becomes the most dependent part, then as the funnel is gradually raised again the fluid "chases" the air of the tubing. As soon as the needle has been passed into the vein the tap is connected, turned on, and a little saline allowed to run into the vein, then the solution of novarsenobillon is poured into the funnel and the saline renewed just before the last of the solution has disappeared. As soon as the surgeon sees that the fluid passing along the "window" has changed colour from yellow to white he will know that all the drug has passed into the vein and he is now only injecting saline solution. If the medical practitioner is not situated near a hospital, where, of course, freshly distilled water and normal saline made therefrom can be readily obtained, he will be able to get both from Messrs. Allen and Hanburys, of 7, Vere-street, London, W., or the Holborn Surgical Instrument Company. The distilled water supplied by the former under the name of "Apyrogen" water is specially prepared as a diluent or solvent of substances for intravenous injection. It is distilled in a Jena glass apparatus and is free from water toxin. The distilled water or normal saline is put up in sealed amber glass tubes ("azoules") of a capacity varying from 10 c.c. to 250 c.c., and can be kept for an indefinite period. The firm distil nearly every day, so that fresh solutions can always be obtained, but I have used distilled water and normal saline of their manufacture over three months old for intravenous medication without the slightest febrile reaction, although the temperature was taken morning and night for one week after the operation. These ampoules of distilled water, normal saline, &c., are kept in stock by the Holborn Surgical Instrument Company.

While the injection is being given it occasionally happens that the flow ceases. This may be due to either of the following causes: 1. The "eye" of the needle may be pressing against some part of the vein wall, the remedy for which is to revolve the needle. 2. A clot may have formed in the lumen of the needle. To remove this obstruction disconnect the needle from the apparatus. Constrict the venous circulation; pass a stylet down the lumen of the needle so as to loosen the clot, when the venous pressure set up by constricting the veins will drive the clot out of the needle, and the operation may be resumed. 3. The bevel of the needle may be out of the vein. This can be verified by a manœuvre similar to that used under heading 2. If after constricting the venous circulation and clearing the lumen of the needle no blood issues from the end of the instrument, then the eye is not in the lumen of a vein, and a fresh puncture had better be made, unless by moving the needle backwards or forwards one can replace the bevel of the instrument within the blood stream, as is evidenced by the blood flow. After the injection is completed the patient has a pad of sterilised lint placed over the puncture, the tap is turned off, the needle is withdrawn by a quick movement, and he holds his arm vertically upwards for a couple of minutes, keeping light pressure on the pad, which is then removed. The site is now cleansed with a solution of 1 in 1000 hyd. et potassii iodidi, and painted with a solution of iodine 2 per cent. in spirit, as was also done immediately preceding the puncture.

Finally, a piece of rubber plaster an inch square, with a tiny piece of boracic lint in the centre to cover the actual wound, is applied, and the dressing is complete. The arm should not be flexed at the elbow for one hour after the injection, so as to prevent blood being forced from the puncture in the vessel wall into the subcutaneous tissues.

The patient is now free to go home, and should not indulge in any form of strenuous exercise for a couple of hours; indeed, it is better when he arrives home to lie down for this period.

Holloway, N.

A MONTHLY RECORD OF ATMOSPHERIC POLLUTION.

METEOROLOGICAL OFFICE: ADVISORY COMMITTEE ON ATMOSPHERIC POLLUTION: SUMMARY OF REPORTS FOR THE MONTHS ENDING

April 30th, 1917.

Place.	Rainfall in millimetres.	Metric tons of deposit per square kilometre. Insoluble matter. Tar.	Carbonaceous other than tar	Ash.	Soluble matter. Loss on ignition.	Ash.	Total solids.	Included in soluble matter. Sulphate as (SO_3).	Chlorine (Cl).	Ammonia (NH_3).
ENGLAND.										
Leicester	42	0·07	4·72	8·98	1·45	1·99	17·21	1·16	0·37	0·14
London—										
Meteorological Office	44	0·10	0·64	7·47	1·58	3·17	12·96	1·45	1·03	0·13
Embankment Gardens	46	0·31	2·20	4·77	3·14	6·17	16·58	3·71	0·95	0·24
Finsbury Park ...	68	0·07	1·28	5·74	3·24	5·36	15·70	3·92	0·78	0·07
Ravenscourt Park	79	0·60	4·20	11·05	3·55	4·00	23·37	2·67	0·65	0·11
Southwark Park	43	0·09	1·08	2·76	2·85	4·99	11·76	2·94	0·91	0·10
Wandsworth Com.	33	0·02	0·41	1·32	1·65	3·82	7·23	1·79	0·58	0·04
Golden Lane ...	46	0·05	1·98	3·34	1·12	2·60	9·09	1·45	0·59	0·12
Malvern	36	Nil.	0·25	0·41	0·64	1·28	2·60	0·59	0·18	F.t.
Manchester—										
Queen's Park ...	41	—	—	3·70	—	—	10·44	—	—	—
School of Technology	31	—	—	4·15	—	—	12·72	—	—	—
Newcastle-on-Tyne	81	0·65	10·75	23·70	2·90	6·28	44·28	3·12	0·63	0·09
Rochdale	66	0·27	7·20	18·02	—	—	—	—	—	—
St. Helens	56	0·65	3·68	8·38	2·67	9·13	24·50	3·97	1·29	0·22
SCOTLAND.										
Coatbridge	32	0·12	1·40	4·15	1·65	3·32	10·64	2·08	0·21	0·14
Glasgow—										
Alexandra Park...	18	0·05	1·40	3·23	0·84	2·17	7·69	1·29	0·24	0·08
Bellahouston Park	28	0·06	1·99	4·82	1·00	3·99	11·86	1·62	0·14	0·11
Blythswood-sq. ...	23	0·14	2·75	5·95	1·28	3·63	13·75	2·33	0·19	0·13
Botanic Gardens	40	0·04	1·47	3·30	1·88	4·77	11·56	2·62	0·22	0·16
Richmond Park...	35	0·06	0·97	1·74	1·32	3·46	7·55	1·75	0·22	0·13
Ruchill Park ...	35	0·08	2·54	6·02	1·16	3·63	13·43	1·74	0·22	0·04
South Side Park..	20	0·33	0·36	1·83	0·66	1·66	4·89	0·86	0·10	0·07
Tollcross Park ...	—	—	—	—	—	—	—	—	—	—
Victoria Park ...	28	0·03	0·54	1·05	1·11	2·96	5·69	1·47	0·15	0·13

May 31st, 1917.

Place.	Rainfall in millimetres.	Metric tons of deposit per square kilometre. Insoluble matter. Tar.	Carbonaceous other than tar	Ash.	Soluble matter. Loss on ignition.	Ash.	Total solids.	Included in soluble matter. Sulphate as (SO_3).	Chlorine (Cl).	Ammonia (NH_3).
ENGLAND.										
Leicester...	51	0·17	3·12	9·37	1·13	2·92	16·70	1·55	0·52	0·25
London—										
Meteorological Office...	62	0·14	1·11	3·12	1·24	2·48	8·09	1·30	0·44	0·18
Embankment Gardens	55	0·80	9·52	15·32	5·32	6·75	37·70	3·51	1·17	0·21
Finsbury Park ...	49	0·05	0·70	3·47	0·81	1·58	6·61	1·67	0·35	0·07
Ravenscourt Park	60	0·39	2·91	6·80	1·49	3·45	15·03	1·86	0·45	0·10
Southwark Park...	67	0·08	5·30	16·44	5·36	9·16	36·33	5·08	1·04	0·14
Wandsworth Com.	35	0·01	0·21	0·64	1·17	2·81	4·84	1·38	0·46	0·06
Golden Lane ...	55	0·03	2·33	8·11	1·10	3·08	14·64	1·64	0·66	0·24
Malvern	96	Nil.	0·21	0·48	1·44	3·01	5·15	1·21	0·33	0·03
Manchester—										
Queen's Park ...	42	—	—	—	—	—	13·30	—	—	—
School of Technology	31	—	—	—	—	—	15·60	—	—	—
Newcastle-on-Tyne	65	0·15	3·60	8·36	1·95	5·58	19·64	2·85	0·46	0·12
Rochdale...	—	—	—	—	—	—	34·60	—	—	—
St. Helens	86	0·21	2·23	5·68	1·72	7·69	17·53	3·24	1·79	0·26
SCOTLAND.										
Coatbridge	61	0·12	2·37	8·18	2·74	5·65	19·06	2·93	0·36	0·23
Glasgow—										
Alexandra Park...	65	0·25	2·91	7·89	3·26	5·87	20·18	2·59	0·14	0·39
Bellahouston Park	74	0·55	3·77	6·91	1·72	6·27	19·22	2·49	0·22	0·14
Blythswood-sq. ...	92	0·50	3·04	10·20	2·64	6·88	23·26	3·13	0·40	0·37
Botanic Gardens..	100	0·70	2·51	6·62	2·92	8·45	21·20	3·38	0·11	0·36
Richmond Park...	78	0·35	2·05	12·78	2·65	5·99	23·82	2·45	0·21	0·27
Ruchill Park ...	87	0·29	2·16	5·91	2·43	5·74	16·53	2·22	0·26	0·17
South Side Park..	70	0·09	1·08	3·67	2·11	6·25	13·20	2·35	0·18	0·14
Tollcross Park ...	62	0·23	1·34	5·30	2·72	6·99	16·58	3·43	0·21	0·15
Victoria Park ...	85	0·23	1·28	5·68	2·34	8·36	17·90	3·42	0·20	0·24

F.t. = Faint trace.

There were no returns from Victoria Park, London station, for April and May, and at Tollcross Park, Glasgow, owing to an accident, the April sample was lost.

"Tar" includes all matter insoluble in water but soluble in CS_2. "Carbonaceous" includes all combustible matter insoluble in water and in CS_2. "Insoluble ash" includes all earthy matter, fuel, ash, &c. One metric ton per sq. kilometre is equivalent to: (*a*) Approx. 9 lb. per acre; (*b*) 2·56 English tons per sq. mile; (*c*) one gramme per sq. metre; (*d*) 1/1000 millimetre of rainfall.

The personnel of public health authorities concerned in the supervision of these examinations and of the analytical work involved remains the same as published in previous tables.

THE ARMY COLLECTION OF WAR SPECIMENS:

THE OPENING OF THE EXHIBITION.

AN exhibition of the Army collection of war specimens was declared open on Thursday, Oct. 11th, at the Museum of the Royal College of Surgeons of England by Sir ALFRED KEOGH, Director-General of the Army Medical Service, who, at the same time, was presented with the Honorary Fellowship of the College. With reference to this presentation an interesting fact is revealed by the archives of the College. Many years ago Sir Alfred Keogh had actually received his number in the examination room of the College, when sitting for the Fellowship, at which point he was unexpectedly called up for foreign service, and had to discontinue the examination.

The ceremony of presentation took place in the presence of a large number of leading surgeons and physicians and medical officers serving with the Navy and Army, as well as of notable civilians. In a brief speech Sir GEORGE MAKINS, President of the College, recalled to the meeting Sir Alfred Keogh's distinguished services to his country as the head of the medical department of the Army in the South African War, as Rector of the Imperial College of Science and Technology, and now as Director-General of the Army Medical Service in the greatest war which the world has ever known.

Sir Alfred Keogh's Address.

Sir ALFRED KEOGH, after acknowledging the honour that had been done to him personally, as well as to the Service which he represented, declared the exhibition open in a brief address, in which he described the stages in the movement which had resulted in an increasing and most valuable store of pathological objects. As early in the history of the war as November, 1914, he said, a committee was constituted under his presidency to compile a medical history of the war, one of whose aims was to collect from casualty clearing stations and military hospitals examples of the diseases and wounds being endured by the soldiers in order that the best means might be adopted for their treatment. Specimens in illustration of these diseases and wounds would constitute an original and reliable source of knowledge for all time. The Army Medical College at Millbank, overworked and understaffed at the beginning of the war, was not in a position to undertake the formation of such a collection as the Medical History Committee had in view, and in May, 1915, Dr. Walter Morley Fletcher, secretary of that Committee, asked the assistance of the Council of the Royal College of Surgeons of England, who at once placed the Museum staff and workrooms of the College at the disposal of the Army Council. In January, 1916, Lieutenant-Colonel T. R. Elliott was placed in charge of this particular service in France, and specimens began to arrive in numbers, the willing coöperation being secured of younger pathologists attached to the clearing stations and hospitals in France—namely, Captain Herbert Henry, Captain H. W. Kaye, Lieutenant T. G. Shore, Captain G. Richardson, Captain Adrian Stokes, Captain W. S. Lazarus-Barlow, Captain E. M. Cowell, Major J. W. McNee, and Captain A. Petrie. Consignments from Egypt representing the diseases and wounds of the campaign in Gallipoli were sent by Captain G. B. Bartlett, and proved of particular value. In the spring of 1917 he appointed Sir John Bland-Sutton to organise the collection of specimens from hospitals at home—especially hospitals at which particular kinds of wounds are being treated, and in that direction also, said Sir Alfred Keogh, the objects of the Medical History Committee were being fulfilled.

The credit of holding an exhibition of the collection while the war is still going on was attributed by the Director-General to Sir Arthur Sloggett, Director-General of Medical Services in France, who urged that in this way the exhibition of specimens would have an immediate educative value. On the question being referred to the Council of the Royal College of Surgeons of England, the College, said Sir Alfred Keogh, at once made arrangements to proceed to the preparation of specimens for exhibition, the Medical Research Committee giving financial assistance. Mr. S. G. Shattock, pathological curator to the College, and his assistant, Mr. Cecil Beadles, undertook the dissection, examination, and exhibition of wounds in the various systems of the body. Colonel F. M. Caird, Colonel Sir R. Jones, Captain E. M. Cowell, Captain Raymond Johnson, Sergeant F. A. Izzard (of the Pathological Museum of the University of Cambridge), Captain G. Richardson, Mr. R. H. Burne, Captain H. E. Gamlen, Dr. F. Stoney, Captain F. A. Hort, Dr. Colin Mackenzie, and Sergeant A. K. Maxwell were among those mentioned by the Director-General as having in various capacities assisted to make the collection thoroughly representative, while he added that special thanks were due to the conservator of the Hunterian Museum, Professor A. Keith, who assumed responsibility for the description and arrangement of macerated specimens illustrating the lesions inflicted by modern missiles so far as bones and joints were concerned.

The Director-General closed his address by making a special reference to the exhibitions of plastic surgery supplied from the Queen's Hospital, Sidcup, where admirable sketches have been made of before and after conditions by Professor H. Tonks, F.R.C.S., with models and casts by Private J. Walkley Edwards; from the Military Orthopædic Hospital, Shepherd's Bush, represented by casts and drawings of deformed limbs before and after operation; and from No. 13 Stationary Hospital in France, whence have come a remarkable series of models, for which Major A. Charles Valadier and Captain H. L. Whale are responsible, showing war wounds of the jaws and the means which have been adopted for their treatment. To an extensive series of skiagrams of face and jaw injuries from the Croydon Military Hospital, sent by Colonel W. T. Lister, the Director-General also called attention. He then declared the Museum open.

The Collection of War Specimens.

Three rooms in the Hunterian Museum have been given up to the exhibition of the Army medical collection. Room 1 contains the section illustrating general means of wound prevention and the specimens of bone injury. Under the heading of Means of Protection we find metal helmets, breast plates, masks, and respirators, several helmets being shown bearing evidence that the heads of the wearers had been saved from mortal wounds. We next have specimens of wounds of the vault of the skull, among which are remarkable examples of extensive destruction, of perforation in all the diameters, of gutter wounds, and especially some interesting injuries where a very small missile has produced a far larger fracture than could have been expected, and other cases where a blow has caused a fracture of the inner plate of the skull, the outer plate remaining intact. There are in this room some notable specimens of injury also of the base of the skull and spinal cord, the upper and lower limbs, and pelvis.

The second room contains specimens prepared by Mr. Shattock and Mr. Beadles, and it is here that the effective characters of the wounds met with in modern warfare may be studied, both in their immediate and in their remote effects. Examples are set out derived from former wars—chiefly dried or bone preparations; also examples of gunshot wounds culled from civil practice. There are specimens from soldiers who fought with Sir John Moore in his retreat to Corunna; there are a few examples from Waterloo, and more of the wounds and injuries of the Crimean War; and there is quite a good series from the Austro-Prussian and Franco-Prussian wars. In those wars the same type of bone injury and the same septic inflammatory sequelæ may be noted, as is to be observed in the specimens of the present war, for the wounds produced by shrapnel and by shell fragments are of the same nature now as in former wars; the septic sequelæ are also the same. In this room are placed a number of models obtained by the late Sir Victor Horsley from his experiments to demonstrate the explosive effects of high-velocity bullets. Such bullets were fired into blocks of soft clay; the models represent the track of the bullet in the clay. In this room the study of modern military wounds can be made—wounds of entrance, wounds of exit, wounds at various stages after the date of infliction, in various stages of healing, and in various stages of sepsis. There are specimens of "excised wounds"—from cases where the surgeon has sought to remove the injured and infected tissues as soon as possible after the date of infliction. A series illustrating injuries to the chest, pleura, and lungs, with the various sequelæ which may follow such lesions, is of great interest. There is one very remarkable injury of the heart; the anterior wall of the right ventricle is extensively lacerated—yet the officer, a member of the Flying Corps, brought his machine safely to earth! There is a very complete representation of vascular injuries, selected and recorded by Sir George Makins.

Injuries of the bowel, stomach, kidney, genito-urinary tract, spleen, spine, larynx, and lung come next for exhibition. Certain specimens will be bound to attract serious study as well as reflection. They represent the lungs of men who suffered in the first cloud of poisonous gas sent over our lines by the enemy early in 1915 at Ypres. The effects of that poison on the whole respiratory system may be studied at all stages, early and late. On the same stand are

recorded the changes which become apparent in the kidney in cases of trench nephritis. Here, too, are represented the conditions, organic disturbances, and disorganisation produced by the *Bacillus aerogenes*.

In one group of specimens are shown successful operations of a general kind, as distinguished from those upon special parts like the face and mouth. This group comprises: successful removal of injured kidney or spleen; of pieces of wounded blood-vessels; cases where vessels have been successfully sutured; the successful removal of wounded loops of the intestine; artificial union of the fractured ends of bones; removal of large fragments of bone or even entire bones, such as the astragalus and scapula, resulting in the saving of limbs.

In the third room there are hung on the walls a series of drawings by Sir Charles Bell, made in Belgium when he was treating the wounded from Waterloo, and in company with them will be found a wonderfully graphic series of sketches by Colonel F. M. Caird representing certain conditions studied by him in France, such as the various stages in the development of "trench-foot." There are also rapid drawings of the conditions resulting from guillotine amputations and pictorial notes of the effects of "Yperite," one of the poisonous offensive German gases.

Then follow, on the same wall, a collection of Sergeant A. K. Maxwell's drawings, accurately and minutely detailed records of clinical conditions, seen in our military hospitals in France. To the expert each drawing tells its own story; for the less expert the attached explanatory cards will be of service. There are also here some excellent drawings by Mr. S. A. Sewell, who is well known as an illustrator of pathological subjects.

At the north end of Room III., close by the door entering into the Museum Hall, are placed a series of specimens for which Major Valadier, R.A.M.C. (No. 13 Stationary Hospital, B.E.F.), is responsible. In this work he has had associated with him H. L. Whale, R.A.M.C. They illustrate the nature of the jaw wounds and facial injuries which have undergone treatment at that hospital, with the results obtained by operation. The exhibits include plaster casts, excellent photographs (many of them in colour), X ray photographs, and a set of wax models of high workmanship.

A group of casts and models obtained from the Military Orthopædic Hospital, Shepherd's Bush, follows. The condition of disabled and deformed limbs before and after treatment are shown by means of plaster casts; the treatment adopted, splints, &c., are represented by means of models.

Next we have an exhibit of great interest from Queen's Hospital, Sidcup (formerly Cambridge Hospital, Aldershot). Wax models, plaster casts, and particularly a series of strong and vivid drawings by Professor Henry Tonks, F.R.C.S., of the Slade School of Art, depict for the visitor the facial deformities which Major H. D. Gillies and Captain J. L. Aymard are called on to treat, the methods which they invent and adopt, and the degree of success which attends their efforts. The models and casts are the work of Sergeant E. Phillips and Private J. Walkley Edwards, who are attached to Queen's Hospital.

On a stand in the centre of the room, immediately in front of the Hunter statue by Weekes, is placed Colonel W. T. Lister's collection of injuries and wounds of the eye. Here may be seen the very numerous forms of lesions which affect the eye in modern warfare—rupture of the eyeball from various causes, the lodgment of missiles, and the pathological sequelæ. A series of drawings elucidate the functional and clinical disturbances which were observed in each case.

Arranged along the centre of the room is a large collection of casts, models, and splints from Queen Alexandra Military Hospital, Millbank, sent by Captain F. A. Hort, R.A.M.C.

Colonel V. Soubbotitch, of the Serbian Army Medical Service, has placed on exhibition his splint-apparatus for treatment of fractures of the lower limb.

There can be no doubt that the policy of holding an interim exhibition of the collection in the stage in which it now is will be of remarkable value. There is enough material at present to give the result of collective skill; men will be able to learn from each other's ingenuity, and to avoid each other's errors. As the official catalogue of the Museum says: "It is when one surveys these collections that one ardently wishes that military surgeons of former campaigns had taken some pains to preserve the medical and surgical conditions they were called on to face. It is so hard for a surgeon to realise that the conditions he is only too familiar with in the heat of a campaign are unknown to those who do not share with him the labours of the field, and will also remain unknown to those who have to undertake the care of soldiers in future times unless a record is made. There cannot be any doubt that in our former wars we have been too apt to attend to the medical exigencies of the campaign, and when it closed to bury our experience instead of consolidating it for the use of a future time and generation."

Correspondence.

"Audi alteram partem."

HOME-BRED MALARIA.

To the Editor of THE LANCET.

SIR,—Dr. H. B. Newham has done well, in your issue of to-day, to call attention to the importance of distinguishing recurrences in soldiers from infected countries and the true home-bred malaria. I write to urge the most careful study of suspected cases of the latter. A few have occurred and there are sure to be others, as there are hundreds of malaria patients in the country and the anopheles is widespread. There are no grounds for alarm. A colony of patients from Salonika has fluttered the academic dove-cotes in Oxford where mosquitoes are prevalent—even anopheles have invaded the bedroom of the Regius Professor of Medicine! Every precaution has been taken by Major Ormerod and Captain Dale, under the direction of Sir Ronald Ross, and, so far as I know, no infection has occurred. In temperate climates districts from which malaria has disappeared have not, to my knowledge, been reinfected. Italian labourers brought the disease to the New England States and there were a few cases but no serious outbreak; nor was the progressive fall in the incidence of malaria in Baltimore interrupted by the importation of many infected Italians. The slight risk, then, from our malarial soldiers in this country may be faced cheerfully. The same may be said of Canada, to which country many infected soldiers have returned. Parts of the Province of Ontario were hot-beds of the disease, which within my memory has disappeared from the districts about the western end of Lake Ontario and the northern shores of Lake Erie. The marshes are there and the anopheles are there, but the disease has gone. As in parts of Italy, the important factor appears to have been the cinchonising of the inhabitants. I retain lively recollections of the buzzing ears of my boyhood from the large doses of quinine administered to us in the spring and autumn.—I am, Sir, yours faithfully,

Oxford, Oct. 13th, 1917. WILLIAM OSLER.

"ANOTHER CASE OF MALARIA CONTRACTED IN ENGLAND."

To the Editor of THE LANCET.

SIR,—In my note published under this title in your issue of Oct. 6th I should have stated that there was no history to be obtained of a previous attack of malaria or of any illness suggestive of malaria. Undoubtedly the possibility suggested by Dr. H. B. Newham in your last issue of a primary attack in Salonika cannot be excluded; but this is exceedingly unlikely, and in view of the publication in your columns of other cases of malaria contracted in this country there seems no good reason for assuming an explanation so much more improbable. I am, Sir, yours faithfully,

R. LOY WILCOX.

North-Western Hospital, N.W., Oct. 15th, 1917.

THE GERMICIDAL POWER OF FLAVINE.

To the Editor of THE LANCET.

SIR,—Professor R. T. Hewlett, in your issue of Sept. 29th, offers some criticisms of our work on flavine.[1] His conclusion is, firstly, that from his experiments—

"The germicidal value of flavine comes out very much lower than that stated by Browning and his co-workers. The difference between the two sets of results is probably due to the use in my experiments of a number of organisms much larger than that employed by Browning and his co-workers."

This demands several observations. 1. Professor Hewlett ascribes to us the use of an amount of organisms 12 times less than we actually used; he has evidently misread our original work, but this becomes a minor point in view of the fact that in our second communication[2] (of which Professor Hewlett was cognisant, but to the substance of which he makes no reference) we had already published our work with larger numbers of organisms, which, so far as one can judge from Professor Hewlett's paper, quite equalled

[1] Browning, Gulbransen, Kennaway, and Thornton, Brit. Med. Jour., vol. i., 1917, p. 73.

[2] Browning, Gulbransen, and Thornton, ibid., vol. ii., 1917, p. 70.

the amounts employed in his experiments. 2. Professor Hewlett knows very well that the "germicidal value" affords significant information only when several antiseptics are compared under precisely similar conditions. In our original communication we gave the comparative values, as obtained in repeated tests, from which the high potency of flavine (acriflavine) was clearly apparent. Now Professor Hewlett finds fault with our results in the case of flavine, but he does not accuse us of giving unjust figures with regard to the old antiseptics, and it is by the latter that the comparative potency of flavine is estimated. Further, in his own work on flavine he omits all comparisons; we feel sure that Professor Hewlett would not desire readers to believe that he wished them to accept his statements as mere dogmatic assertions and yet that is in effect what he does. The general medical reader, who is himself without laboratory facilities, can only draw conclusions from the data afforded, and Professor Hewlett omits half of the data which are necessary in order to support his contention that we have exaggerated the potency of flavine. Again, Professor Hewlett raises the old point that the action of an antiseptic when mixed with a quantity of pus affords an important indication as to its therapeutic efficiency in an infected wound. From the point of view of use as a test medium, pus is so extremely inconstant in composition that results vary enormously; but, as on a previous occasion,[3] we can only repeat that any surgeon who treated infected wounds by mixing up antiseptic with the pus contained in them, would entertain a curious idea as to his functions!

It seems, however, that the real meaning of Professor Hewlett's work is an attempt to give expression to the view that a substance which is to possess any therapeutic value as an antiseptic must *rapidly kill* organisms. The time-hallowed tests employed in the standardising of antiseptics, of course, gave information on this point and almost on nothing else; the practical inefficiency of the substances, which were accredited by such tests, e.g., phenol and mercuric chloride, when it came to putting an end to suppuration in infected wounds or to preventing its occurrence, is well known. Now, we have shown that one of the pre-eminent qualities of the flavine bodies is their *antiseptic* power in the true sense of the word, i.e., their capacity—in a serous medium, such as exists on the surface of a wound which is subjected to the ordinary procedures of surgical cleansing—for inhibiting the activity of organisms in very high dilutions, which are relatively harmless to the tissues. This combination of desirable properties in one substance is new; but the idea of antiseptic action is not new; the conception of its value appears, however, to be novel to those who have concerned themselves with the cleansing of rubber gloves, sterilisation of infected rooms or sputum, and other common applications of antiseptics (purposes for which we have never recommended flavine); and, being novel, it seems to be either misunderstood or else regarded as odious according to the temperament of the critic.[4] We shall, however, endeavour to pursue our search for those properties of antiseptics which can be determined in the laboratory and which are of use as indicating substances of therapeutic value, and we shall be content to be judged in the long run by the massed opinion of those who are bound to rely on such adjuncts in the treatment of their patients. We do, however, deprecate destructive criticism, which contributes little or nothing to advance towards the solution of a most urgent problem, but which almost seems devised—however unintentionally—in order to "scare off" those who might be inclined to give an unbiassed trial to substances for whose utility in practice there is already a great body of evidence.

I am, Sir, yours faithfully,

Middlesex Hospital, Oct. 11th, 1917. C. H. BROWNING.

WAR DEAFNESSES.

To the Editor of THE LANCET.

SIR,—In a leading article on War Deafnesses in your issue of Oct. 13th you refer to a paper of ours which appeared in THE LANCET of the previous week. Two criticisms call for reply. Firstly, you state your belief that "any other powerful stimulus applied during the removal of the subconscious determination against hearing would have been as effective as suggestion proved," but you do not give any idea of the nature of such stimuli. Both of our cases had been treated without success for several months before we saw them by all kinds of powerful stimuli, and we applied every means we could devise before resorting to the pseudo-operation, the instantaneous and complete success of which surely justified the method. There is no question of its "frequent" use, as we have only applied it in the very exceptional cases in which all other treatment, such as simple re-education and persuasion, or suggestion with or without the aid of electricity, whilst awake, asleep, in the hypnotic state, or under light etherisation, had failed.

Secondly, you express doubt as to the correctness of our conclusion that total deafness associated with continued excitability of the posterior labyrinth is evidence of hysterical deafness, because "two cases are quite an insufficient basis for such a generalisation." But our conclusion is based on over 200 cases, not on the two cases which we quoted in detail only because of the exceptional interest attached to the dramatic manner in which they were cured. Before our conclusion can be rejected some very much stronger evidence is required than a bald statement to the effect that "cases of mild labyrinthitis occur in which there appears to be total deafness, but in which the canal reflex can still be excited." What is the evidence for this? Our experience teaches us that in such cases the mild labyrinthitis leads to mild deafness, the complete deafness being due to the addition of an hysterical element. This is a matter of extreme practical importance, as in such cases we have always succeeded in removing the hysterical element by suggestion so that partial hearing was noticed, sometimes many months after a diagnosis of permanent total deafness had been made elsewhere. On the other hand, acceptance of the notion that mild labyrinthitis may lead to complete deafness must result in the neglect of such treatment and the consequent perpetuation of the condition. There can thus be no question that from the patient's point of view our conclusions and the results which follow from these are infinitely more desirable than the pessimistic view taken in your leading article. We are, Sir, yours faithfully,

ARTHUR F. HURST,
Netley, Oct. 15th, 1917. E. A. PETERS.

*** The success in the hands of Major Hurst and Captain Peters of the pseudo-operation as a sequel to a course of suggestion in the two cases cited is so striking that others will undoubtedly follow in their steps, and we therefore expressed the hope that some other stimulus less derogatory to the status of surgery might be found equally efficient. The existence of cases of total deafness with retention of canal excitability is a matter of pre-war experience.—ED. L.

INSANE SAILORS AND SOLDIERS.

To the Editor of THE LANCET.

SIR,—The Board of Control has issued a circular with reference to "Service patients," or, in other words, sailors and soldiers who have become insane or are otherwise mentally affected. To suggest, as has been done, that asylums would in any case have had to receive insane sailors and soldiers as paupers and keep them as such is introducing into the question the lowest argument of all—the pecuniary one. And the question is not yet and by no manner of means settled. At the present moment insane soldiers are being admitted to county asylums as pauper lunatics through the medium of the Poor-law.

I wish to comment on the Circular of Instructions issued by the "Board of Control" on June 27th of this year relating to the classification and treatment of insane sailors and soldiers as "Service patients." Do not let us, then, obscure the issues by wondering what we are to do with insane sailors and soldiers after the war and how to cut their cost of maintenance to the lowest possible limit, which seems to be the end in view. The question of cost of both present and future accommodation and maintenance ought not to be approached in a parsimonious spirit, and yet it is at the root of the matter, because up to the present the Government has shown no desire to build asylums for the accommodation of insane sailors and soldiers, nor to provide for their accommodation other than in pauper asylums.

But the nation's indebtedness to those broken men calls for provision for them other than in pauper asylums and in

[3] Ibid., 1917, i., p. 177.
[4] See Browning, THE LANCET, Sept. 15th, 1917.

association with pauper and even criminal patients. The mere fact of giving them the cognomen of "Service patients" and paying for their maintenance at a little over the pauper and under the private rate will not dispauperise them in any sense of the term. Without labouring the point or entering into actuarial details, the allowance of 3*s*. 9*d*. above the pauper maintenance-rate is insufficient to clear them of the taint and stigma of pauperism.

To my mind there appears to be a very simple solution of the difficulty. Let the Admiralty and War Office at once decide that no insane sailor or soldier be discharged from either service until some months after the war has ended. In this way they can be detained under the Naval and Military Acts, and without certificate of insanity, in military hospitals or in places taken over as such. They will thus be saved from at least documentary evidence of insanity—the insanity which, but for the extraordinary vicissitudes through which they have passed, would in many cases have never occurred. Allocate, therefore, one or a portion of one of the asylums taken over by the War Office as military hospitals for this purpose. This would assure the relatives that these patients were not associated in any way with the pauper and criminal insane in pauper asylums. The Government apparently wishes to avoid the expense of the erection and upkeep of an asylum of its own; it prefers to pay for its insane soldiers at a maintenance rate that still keeps them within the confines of pauperism; and it is apparently willing that they associate with the pauper insane. It shelves its obligation in this way. And the Board of Control has apparently acquiesced. An asylum taken over by the War Office and devoted to this purpose would, of course, as time goes on, have an annual diminishing number owing to death or recovery, and would in the natural course of events as these changes took place revert to its original owners—the Asylum Committee—and to its original purpose, the accommodation of pauper lunatics. Any argument that with diminishing numbers this would entail the remainder being kept at an extravagant cost may be dismissed as puerile, for surely it is not beyond the official mental capacity to conceive that a smaller building could be taken over; and, further, the same objection, if objection it be, applies in the case of asylums and other buildings taken over for the wounded. In any case the Government will require after the war to erect an asylum for insane soldiers as the present Government ones will not have nearly sufficient accommodation.

If the policy of allocating one or a portion of one of the asylums referred to were adopted, for at least the period of the war, the only possible objection would be that friends, owing to great distance, could not visit the patients. All war, however, inflicts hardships, and even in time of peace how many hundreds of soldiers serving abroad do not see their friends for many years! Moreover, to my mind all insane sailors and soldiers should be accepted as "Service patients" from the commencement of the attack and quite irrespective of former attacks of insanity, any history of heredity or mental deficiency, or any form of insanity due to syphilis contracted years before the war. There must be no inquiry into antecedents. The country has enlisted and made use of these men in its defence, and there ought to be no discrimination in order to avoid responsibility. No such sophistries and refinements hold in the "Workmen's Compensation Act." If all insane sailors and soldiers are not classed prior to admission to an asylum as "Service patients" irrespective of family history, former attacks of insanity, insanity due to syphilis, epilepsy, &c., there is bound to be further agitation and trouble.

Again I say the Government should give a clear pronouncement on these points.

I am, Sir, yours faithfully,
JAMES F. GEMMEL.

THE TREATMENT OF ENURESIS.

To the Editor of THE LANCET.

SIR,—Any addition to our present methods of treatment of this distressing complaint is of value to the medical profession. I should like to be permitted to state that, following the advice of my friend, Dr. R. C. Mullins, of Durban, I have successfully dealt with, in the Genito-Urinary Department of Guy's Hospital, a fair number of cases by a very simple form of treatment, of which I had not heard previously to 1914; also I have not found anyone who was familiar with it since that year, although, doubtless, many of your readers have tried it. The method consists in the insertion of a catheter into the bladder, and running fluid slowly through into that organ, at a very low pressure. At first only that amount of fluid which the patient can tolerate (say three ounces) is inserted. The fluid injection is repeated after a short interval, and withdrawal of the fluid already inserted, but a very small increase in amount is permitted. This is repeated three or four times with gradually increasing quantities of fluid. It is found that the patient can tolerate slight increases. The treatment is carried on over a period of a week or ten days, until a quantity of fluid amounting to 10 ounces can be retained by the patient. The fluid injected is boracic lotion at a temperature of 100° F.

The essential points of the treatment are: (1) The passage of a clean catheter; (2) the injection in gradually increasing quantities of a mild antiseptic, at a little above body temperature and at a very low pressure. The bladder is thus trained to hold more fluid than it has previously done. All the patients upon whom I have tried this treatment, at whatever age, have very much improved in their power of retention, wherefore I have decided to put the method on record.—I am, Sir, yours faithfully,

A. R. THOMPSON,
Surgeon in Charge of the Genito-Urinary Department, Guy's Hospital.

Wimpole-street, W., Oct. 8th, 1917.

QUININE THERAPY AND HYDROTHERAPY IN THE TREATMENT OF MALARIA.

To the Editor of THE LANCET.

SIR,—Though the therapeutic value of quinine in severe malarial infections seems at the present time to be held in less confident esteem than formerly, the potency of this drug in affording relief from urgent symptoms in the considerable number of such cases which I was recently called upon to treat was a revelation to one who, like myself, has had no such previous experience, and as proficiency was gained in its use and administration, urgent symptoms, especially those of cerebral type, no longer gave rise to the keen anxiety that they at first occasioned. On the other hand, as has been frequently noted by other observers, it was essentially in those persons in whom the disease became dormant, with only occasional exacerbations, that quinine proved to be less efficacious, which may have been due to the fact that these patients did not receive the massive dosage that was accorded to those in whom such urgent symptoms were present; for in order to procure good results it is, in my experience, essential that the drug be used with no sparing hand, and essential too, of course, that after administration it shall be absorbed.

Oral administration is not dependable. In the first place, a large dose of quinine in mixture is very nasty; and, such is the weakness of human nature, that patients will sometimes throw away a dose which they pretend to have taken. Secondly, when swallowed, it is quite uncertain at what rate it will enter the blood stream, a factor that must vary considerably in different individuals. In many patients an extraordinarily thick white furring of the tongue develops as soon as they begin to take quinine mixture, and in them it is unlikely that the process of absorption goes on satisfactorily or completely; whilst if exhibited in the form of compressed tablets the drug may never be absorbed at all. Thirdly, in addition to those effects that are desired, other undesirable effects are sometimes produced which may lower the patient's resistance towards other diseases, and especially, one would think, towards any intestinal infections that may be prevalent. From personal experience it is certain that an acute diarrhœa may be set up after taking no larger dose than 10 grains of the sulphate; for I could reckon on a night of colic with nine or ten watery motions after taking such a dose of quinine the previous evening, for supposedly prophylactic purposes.

In severe cases, therefore, the drug should be given by injection. For this line of treatment the intravenous route is, no doubt, the most certainly efficient; but this method is also not unattended by disadvantages, and the results of intramuscular injection were so satisfactory that it seemed unwise to discard this latter in favour of any other method. 15 or 20 grains of the bi-hydrochloride were usually given at

the commencement of treatment, which dose was repeated in the course of a few hours when coma or other urgent symptoms were present, and under continued energetic treatment even the apparently most desperate cases recovered. For instance, I had a man in my wards who lay in deep and stertorous coma for over 36 hours and who ultimately made a good recovery under large doses of quinine bi-hydrochloride given in this way, 90 grains being administered in 24 hours. This is a large dose and one that I personally never exceeded; but I have been shown cases in a foreign hospital where the maximum daily dose was 8 grammes (120 grains) given by intravenous injection, and the responsible medical officer in charge was himself a resident of a highly malarious country and possessed a wide experience in the treatment of the disease. It would be interesting to know whether, when such doses have been constantly employed, anything other than good results have been obtained in severe cases of malaria.

But by no means all cases of malaria are severe, and there are malarious countries where other means of treatment are also resorted to. I have seen a peasant with a temperature of 104° F., who was suffering from both malaria and dysentery, standing to sluice his head and chest with cold water, although he was almost too weak to crawl out of bed at all; and others, too ill to rise, have called out daily for the same thing. This belief in the efficacy of cold water is doubtless the result of experience and of the teaching of Priessnitz and his followers during the first half of last century, but it is not merely a local doctrine; for at the time that I found these peasants applying this line of treatment for themselves it was interesting to read in THE LANCET (1916) reports of successful hydrotherapeutic measures in the treatment of malaria in Switzerland. Possibly it is precisely those cases with latent infections, in which, as already stated, quinine alone gives such disappointing results, that derive benefit from treatment by baths of various kinds. If hydrotherapy has any influence at all, and there must be few who would deny that it has, it is surely to be expected that this would be demonstrated in just such a condition, in which liver, spleen, and other internal organs form the resting place for the infecting organism, which is ready to reassert itself whenever general conditions may be favourable for it to do so.

For such a line of treatment, and especially at the present time, it may fairly be claimed that Torquay is peculiarly adapted, both by reason of its distinctive situation and on account of the thoroughly complete and up-to-date bathing establishment that has lately been installed by the authorities, in which all baths and douches—hot and cold, local and general—can be administered with either salt water or with the exceptionally soft water from Dartmoor.

I am, Sir, yours faithfully,

A. E. CARVER,
Late temporary Lieutenant R.A.M.C.

Torquay, Oct. 16th, 1917.

THE ANNUAL MEETING OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

To the Editor of THE LANCET.

SIR,—The Society of Members of the Royal College of Surgeons of England addressed a letter to the Council of the Royal College of Surgeons of England respectfully suggesting that, in view of the present great pressure on the time and money of medical men at home, and the absence of so many of our members abroad on His Majesty's service, the annual meeting of Fellows and Members at the College should not be held this year, the Society reserving its advocacy of the cause of the Members for future suitable occasions. This suggestion was considered at a meeting of the Council of the College on Oct. 11th, when it was decided to proceed with preparations for the annual meeting on the usual lines.

We think that this decision is regrettable, as many Members will be unable to attend, while the expenses associated with the meeting might have been saved to the College funds.

I am, Sir, yours faithfully,

SIDNEY C. LAWRENCE,
Honorary Secretary, Society of Members of the Royal College of Surgeons of England.

Oct. 14th, 1917

SPIRAL FIELDS OF VISION AND NEURASTHENIA.

To the Editor of THE LANCET.

SIR,—Your review of Jones and Llewellyn's book on "Malingering," in your issue of August 4th, raises an interesting point regarding helicoid curves in the chapter on the eye, contributed by me. For while I have attributed spiral fields of vision to neurasthenia and not to hysteria, your reviewer believes that the converse is usually taught. The helicoid appearance is, I think, universally considered to be due to the abnormally quickly induced fatigue typical of neurasthenic subjects. I do not dispute the statement that helicoid fields were first observed in hysteria, but it is well recognised that neurasthenia may be associated with hysteria, and the peculiar field may, with plausibility, be referred to the neurasthenic element. I think all authorities agree that if suggestibility be the salient feature of hysteria, "fatigability" is the core of neurasthenia, and therefore a fatigue field is more characteristic of the latter syndrome.

I am, Sir, yours faithfully,

Bath, Oct. 13th, 1917. W. M. BEAUMONT.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

P. Macarthur to be temporary Surgeon.

ARMY MEDICAL SERVICE.

Surg.-Gen. R. H. S. Sawyer, C.M.G., is retained on the Active List under the provisions of Articles 120 and 522, Royal Warrant for Pay and Promotion, and to be supernumerary.

Lieut.-Col. H. G. Barling, C.B., R.A.M.C., T.F., to be temporary Colonel.

ROYAL ARMY MEDICAL CORPS.

T. B. Futcher, C.A.M.C., to be temporary Lieutenant-Colonel.

Temp. Major C. Brown, Canadian Army Dental Corps, to be temporary Lieutenant-Colonel while specially employed.

Temp. Hon. Major E. W. White to be temporary honorary Lieutenant-Colonel.

Temp. Hon. Lieut.-Col. L. C. Parkes (Major, R.A.M.C., T.F.) relinquishes his temporary honorary rank.

Lieut.-Col. T. E. Sandall, Lincolnshire Regiment, T.F., to be temporary Lieutenant-Colonel.

Capt. E. D. Caddell and Major B. H. V. Dunbar, D.S.O., relinquish the acting rank of Lieutenant-Colonel on reposting.

Temp. Major G. J. Boyce, C.A.M.C., to be acting Lieutenant-Colonel.

Temp. Major (Capt., R.A.M.C. T.F.) F. A. Hepworth relinquishes his temporary rank on reposting.

Temp. Capts. (C.A.M.C.) G. W. Treleeven and S. G. Ross to be acting Majors.

Temp. Capt. F. F. Middleweek to be temporary Major whilst commanding troops on a hospital ship.

Temp. Hon. Lieut. Sir F. M. Farmer to be temporary Honorary Major.

B. Lyons to be temporary Captain.

Temporary Lieutenants to be temporary Captains: R. T. Worthington, V. Colmer, F. J. Colling, A. G. Gilchrist, G. E. Lloyd, J. Bradley-Hughes, F. W. Harrowell.

H. H. Scott, late temporary Captain, is granted the honorary rank of Captain.

A. Renshaw to be temporary Honorary Captain whilst employed with the Welsh Hospital, Netley.

R. Gellatly to be temporary Lieutenant whilst serving at the Huddersfield War Hospital.

To be temporary Lieutenants: R. Edridge, A. J. B. Leckie, J. Crean, H. McC. Fleming, A. F. Miller, W. McQuitban, T. F. Ryan, F. P. B. MacTavish, E. W. Goble, J. G. Lessey, J. McNamara, J. Magner, W. Lovell, W. Murphy, P. D. Maclean, R. W. H. Meredith, W. H. C. Patrick, H. E. Alexander, K. H. Dyke, A. H. L. Thomas, S. M. Green, R. T. Edwards, S. W. Matthews, D. Wardrop, J. B. C. Brockwell, A. B. Fearnley, J. C. D. Allan, W. Bain.

A. C. Delacroix to be temporary Honorary Lieutenant.

Officers relinquishing their commissions:—Temporary Captains: D. McD. Wilson, T. Redmayne, R. H. L. O'Callaghan, T. R. Davey (on account of ill-health), P. M. Turnbull, F. G. Martin (granted honorary rank of Captain). Temporary Lieutenants: K. B. Allan, J. Pugh.

Temp. Capt. W. J. Bell, C.A.M.C., resigns his temporary commission.

SPECIAL RESERVE OF OFFICERS.

Capt. W. H. L. McCarthy relinquishes the acting rank of Lieutenant-Colonel on reposting.

Capt. W. McCombie to be acting Lieutenant-Colonel whilst in command of a Field Ambulance.

Lieutenents to be Captains: F. M. Rorie, J. A. W. Cullen.

To be Lieutenants: Second Lieutenant G. R. Sharp (from Unattached List, T.F.), D. E. Hearn (from Durham University Contingent O.T.C.).

TERRITORIAL FORCE.

Capt. W. B. Keith is seconded whilst holding an appointment as Deputy Assistant Director of Medical Services, and Capt. R. C. Canney is seconded for duty with a General Hospital.

Capt. (temp. Major) W. S. Colman relinquishes his temporary rank and is restored to the Establishment.

W. J. Smyth (late Surgeon Captain, A.M.S.) to be temporary Major, Hampshire Medical Volunteer Corps.

S. P. Matthews to be temporary Lieutenant and Medical Officer, 8th Battalion Sussex Volunteer Regiment.

J. G. Miller (late Captain, R.A.M.C.) to be temporary Second Lieutenant, 4th Battalion Northumberland Volunteer Regiment.

R. A. Walter to be temporary Lieutenant and Medical Officer, 3rd Battalion Kent Volunteer Regiment.

G. Stowell to be temporary Captain, Lancashire Medical Volunteer Corps.

E. Harrison to be temporary Captain, East Yorkshire Medical Volunteer Corps.

Temp. Capt. and Medical Officer J. Lytle, from 2nd Battalion, Shropshire Volunteer Regiment, Temp. Capt. G. Hollies, from 1st Battalion, Shropshire Volunteer Regiment, and H. C. Woodhouse to be temporary Captains, Shropshire Medical Volunteer Corps.

Temp. Capt. and Medical Officer E. Quayle, from 2nd Battalion, Lancashire Volunteer Regiment, to be temporary Major, Lancashire Medical Volunteer Corps.

A. Linnell to be temporary Captain, Northamptonshire Medical Volunteer Corps.

W. A. Warters to be temporary Lieutenant and Medical Officer, 5th Battalion, Derbyshire Volunteer Regiment.

R. F. H. Newton to be temporary Lieutenant and Medical Officer, 7th Sussex Volunteer Regiment.

E. W. Archer (late Captain, R.A.M.C.) to be temporary Captain and Medical Officer, 2 3rd Battalion, East Riding Volunteer Regiment.

JOURNAL OF THE ROYAL ARMY MEDICAL CORPS.

In the September number of this journal Mr. R. E. Savage, protozoologist attached to the Royal Army Medical Corps, publishes a report on the treatment of 59 cases of *Entamœba histolytica* infection, to which Captain J. R. Young contributes some clinical remarks. Most of the cases dealt with acquired their infection in Mesopotamia, Salonika, or Egypt, but some had their first attack on Gallipoli in the winter of 1915. Thirty-seven of the cases were cyst carriers, while 22 were acute cases. The results of five different courses of treatment with emetine, emetine with pulv. ipecacuanhæ, and emetine bismuth iodide are described. A joint paper by Captain T. J. Mackie and Captain H. G. Wiltshire discusses the diagnostic interpretation of the agglutination test in typhoid and paratyphoid infection occurring among typhoid vaccinated troops, and Mr. H. M. Woodcock, D.Sc., of the Lister Institute of Preventive Medicine, gives the result of some protozoological experiences during the summer and autumn of 1916. Other articles are the Intravenous Administration of Quinine Bihydrochloride in Malaria and a Remark upon the Form of the Parasite Responsible for Relapses (War Office Investigations), by Lieutenant-Colonel S. P. James, I.M.S., and Methods Employed in the X Ray Department of a Military Hospital, with a Few Notes on One or Two Cases of Interest, and on the Treatment of Trench Foot Adopted There, by Dr. Russell J. Reynolds. Colonel R. H. Firth again reverts to his enjoyable "Some Musings of an Idle Man."

URBAN VITAL STATISTICS.

(Week ended Oct. 13th, 1917.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 17,000,000 persons, the annual rate of mortality was 11·8, against 10·8 and 11·1 per 1000 in the two preceding weeks. In London, with a population exceeding 4,000,000 persons, the death-rate was 12·0, or 0·5 per 1000 above that recorded in the previous week; among the remaining towns the rates ranged from 3·6 in Acton, 6·2 in Edmonton, and 6·4 in Rochdale, to 19·0 in Cambridge, 19·9 in Middlesbrough, and 21·9 in Stockton-on Tees. The principal epidemic diseases caused 381 deaths, which corresponded to an annual rate of 1·2 per 1000, and included 243 from infantile diarrhœa, 54 from diphtheria, 34 from whooping-cough, 30 from measles, 14 from enteric fever, and 6 from scarlet fever. The deaths from diarrhœa, which had been 344, 267, and 278 in the three preceding weeks, fell to 243 last week, and included 43 in London, 16 in Sheffield, 15 in Hull, and 13 in Middlesbrough. The 924 cases of scarlet fever and 1271 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were respectively 71 and 105 above the numbers remaining at the end of the previous week. Of the deaths from all causes in the 96 towns, 120 resulted from violence. The causes of 37 deaths were uncertified, of which 11 were registered in Birmingham and 3 in Darlington.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 11·8, against 11·9 and 10·7 in the two preceding weeks. The 250 deaths in Glasgow corresponded to an annual rate of 11·7 per 1000, and included 10 from infantile diarrhœa, 7 from measles, 7 from whooping-cough, 3 from diphtheria, and 2 from scarlet fever. The 67 deaths in Edinburgh were equal to a rate of 10·5 per 1000, and included 2 from diphtheria, 2 from infantile diarrhœa, and 1 from measles.

Irish Towns.—The 121 deaths in Dublin corresponded to an annual rate of 15·8 per 1000, or 4·3 above that recorded in the previous week, and included 9 from infantile diarrhœa, 3 from diphtheria, and 1 each from enteric fever and measles. The 87 deaths in Belfast were equal to a rate of 11·5 per 1000, and included 5 from infantile diarrhœa, 1 from enteric fever, and 1 from diphtheria.

ROYAL MEDICAL BENEVOLENT FUND GUILD.—The Guild has undertaken to administer a fund raised by the friends of the late Mrs. John Phillips as a memorial to her work in aiding necessitous families of the medical profession. A sum exceeding £500 has already been raised for an exhibition, and further subscriptions may be sent to the honorary treasurer, Mrs. Muir, "Yellow Wood," Weybridge. A sum of £368 has also been allocated to the Guild by the friends and patients of the late Dr. L. Vernon Jones. The annual income of both funds will be used for the education of children of those who are beneficiaries of the Benevolent Fund.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue:—

Killed.

Temp. Capt. W. T. Chaning-Pearce, R.A.M.C., attached Liverpool Regiment, was educated at Cambridge and at Guy's Hospital, London, and qualified in 1911. He held appointments at Guy's, at the London Hospital, and at the Croydon General Hospital, and was in practice at Ramsgate before joining up.

Capt. K. T. Limbery, R.A.M.C., was a student at St. Thomas's Hospital, London, and qualified at the beginning of 1916. He joined up shortly afterwards.

Capt. W. D. Reid, M.C., R.A.M.C., attached Manchester Regiment, qualified at Edinburgh in 1910 The award of the M.C. was recorded in THE LANCET of March 10th, 1917, p. 392.

Capt. N. H. W. Saw, M.C., R.A.M.C., attached Worcestershire Regiment, was a student at Guy's Hospital, London, and qualified early in 1915, joining up shortly afterwards. The award of the M.C. was recorded in THE LANCET of Sept. 30th, 1916, p. 621.

Capt. J. H. C. Gatchell, R.A.M.C., attached Royal Sussex Regiment, qualified at Dublin in 1912, and was in practice at Dunamanagh, co. Tyrone, prior to joining the R.A.M.C.

Capt. A. G. Whitehorne-Cole, R.A.M.C., was a student at St. Mary's Hospital, London, and qualified in 1906. He held appointments at the Cancer Hospital and at St. Mark's Hospital, London, and contributed several papers to medical literature. He was in practice in New Cavendish-street, London, before joining the R.A.M.C.

Died of Wounds.

Capt. J. J. P. Charles, R.A.M.C., attached Herts Regt., qualified at Edinburgh in 1909, and held appointments at the London Lock Hospital and at the Norfolk and Norwich Hospital. He was in practice at Swanage before joining the R.A.M.C. in August, 1914.

Capt. L. Oldershaw, R.A.M.C., attached Manchester Regiment, was educated at Liverpool University and qualified in 1915, joining up shortly afterwards.

Wounded.

Lieut. E. H. R. Altounyan, R.A.M.C., attd. London Rifles.
Capt. W. McM. Chesney, M.C., R.A.M.C.
Capt. A. Morris, R.A.M.C.
Capt. S. J. Simpson, R.A.M.C.
Capt. W. F. Wilson, M.C., R.A.M.C., attd. Royal Fusiliers.
Lieut. G. S. Lawrence, R.A.M.C.
Staff-Surgeon E. L. Atkinson, R.N.
Capt. A. R. Grant, R.A.M.C.
Capt. W. McConnell, R.A.M.C., attached Royal Fusiliers.
Major J. S. Y. Rogers, R.A.M.C.
Lieut. R. C. Rogers, R.A.M.C., attached R.G.A.
Capt. A. E. Mackenzie, R.A.M.C., attached Royal West Surrey Regiment.
Capt. W. F. Young, R.A.M.C.
Capt. T. B. Brandon, R.A.M.C.
Capt. F. E. Johnson, R.A.M.C.
Capt. F. P. Grove, R.A.M.C., attd. Royal Welsh Fusiliers.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported:—

Brigadier-General D. E. Cayley, C.M.G., wounded, son of the late Deputy-Surgeon-General H. Cayley, C.M.G.

Temp. Capt. W. T. Chaning-Pearce, R.A.M.C., killed in action, third son of Dr. J. Chaning-Pearce, of Ramsgate.

Capt. H. S. Chalmers, Royal Field Artillery, died of wounds, second son of Dr. A. K. Chalmers, of Glasgow.

Capt. L. A. L. Fink, M.C., Bedfordshire Regiment, killed in action, son of Major G. H. Fink, I.M.S. (ret.), of Finchley, London.

Second Lieut. H. W. Fleming, Bedfordshire Regiment, killed in action, second son of the late Dr. A. J. Fleming, of Hampstead, London.

Capt. J. J. P. Charles, R.A.M.C., died of wounds, son of the late Professor Charles, of Queen's University, Cork.

Second Lieut. D. Heald, Rifle Brigade, died of wounds, only surviving son of Dr. H. Heald, of Ormskirk.

Second Lieut. S. W. Wayte, M.C., Royal Field Artillery died of wounds, younger son of Dr. J. Wayte, of Croydon.

Capt. A. A. Clarke, M.C., Leicestershire Regiment, killed in action, only son of the late Dr. A. Clarke, of Morley, Yorks.

Second Lieut. T. G. de Denne, Devon Regiment, killed in action, youngest son of Dr. T. V. de Denne, of Sidmouth, Devon.

Capt. B. W. Conway, Manchester Regiment, killed in action, eldest son of Dr. B. W. Conway, of Longsight, Manchester.

Second Lieut. J. M. Blake, Devon Regt., killed in action, son of the late Dr. M. D. Blake, of Grantchester, Cambridge.

MINISTRY OF NATIONAL SERVICE: ITS MEDICAL ORGANISATION.

The details of the organisation of the medical department of the Ministry of National Service have now been made public, and follow exactly upon the lines laid down by Sir Auckland Geddes in his recent speech at Nottingham, which we published last week. The Chief Commissioner of Medical Services with direct responsibility to the Minister is Dr. James Galloway, whose duties are to organise and administer the medical service of the Ministry.

Regions and Medical Commissioners.

The regions into which the country has been divided for the purpose of making a medical survey of the male population of military age are as follows:—

1. *Northern*, comprising Northumberland, Durham, Cumberland, Westmorland.
2. *North-Western*, comprising Lancashire and Cheshire. Commissioner: Dr. G. Redmayne Murray.
3. *Yorks and East Midland*, comprising Yorkshire, Lincolnshire, Nottingham, Derby, Leicester, Northampton, Rutland. Commissioner: Dr. T. Wardrop Griffith.
4. *West Midland*, comprising Stafford, Warwick, Worcester, Hereford, Shropshire. Commissioner: Colonel W. H. Bull.
5. *Wales*. Commissioner: Dr. W. Bickerton Edwards.
6. *South-Western*, comprising Gloucester, Wilts, Somerset, Dorset, Devonshire, Cornwall. Commissioner: Sir James Porter.
7. *East Anglia*, comprising Norfolk, Suffolk, Essex, Cambridge, Huntingdon, Bedford, Bucks, Oxford, Berks, Herts. Commissioner: Dr. W. Hale White.
8. *South-Eastern*, comprising Kent, Sussex, Hants, Surrey. Commissioner: Sir Charles Bedford.
9. *London*. Commissioner: Colonel C. R. Tyrrell.
10. *Scotland*. Commissioner: Dr. Norman Walker.

The Medical Boards.

One or more medical boards will be established in each recruiting area into which the regions are divided. The number of these boards is to be about one hundred, and the following places have been mentioned:—

London Region.—North London, West London, South London, East London, Woolwich, Wandsworth, Wood Green, Hounslow, Holloway, White City, Camberwell, Stratford, Croydon.

West Midland Region.—Stoke-on-Trent, Birmingham, Worcester, Hereford, Wolverhampton, Shrewsbury, Warwick, Lichfield (Stafford).

South-Eastern Region.—Brighton, Canterbury, Guildford, Maidstone, Southampton.

South-Western Region.—Plymouth, Bristol City, Gloucester, Dorchester, Exeter, Taunton, Trowbridge, Truro.

East Anglian Region.—Chelmsford, Oxford, Cambridge, Bedford, Huntingdon, Norwich, Ipswich, Aylesbury, Hertford, Reading.

Northern Region.—Sunderland, Middlesbrough, Newcastle, Carlisle.

North-Western Region.—Manchester, Lancaster, Ashton-under-Lyne, Warrington, Liverpool, Bury, Preston, Blackburn, Chester.

Yorks and East Midland Region.—Derby, Leicester, Sheffield, Pontefract, Bradford, Northallerton, Hull, Nottingham, Lincoln, Leeds, Barnsley, York, Halifax, Northampton, Oakham.

Scottish Region.—Glasgow, Dundee, Ayr, Perth, Galashiels, Aberdeen, Edinburgh, Hamilton, Glencorse, Nairn, Stirling, Inverness.

Welsh Region.—Cardiff, Wrexham, Newport, Carmarthen, Brecon.

The new medical boards which come into being on Nov. 1st will each consist of four local practitioners selected by the advisory board on the recommendation of the Statutory Medical War Committees from names furnished to them by the Local Medical War Committees. Medical men who wish to serve are invited to communicate with their local committee, or in the London district direct with the Central Committee. A roster will be chosen of at least double the number of practitioners necessary to compose a board.

Special Opinions and Appeals.

In cases presenting difficulty, such as those of suspected tuberculosis, heart disease, and unusual defects of vision, the presidents of medical boards will be empowered to obtain the opinions of specialists, and it is hoped that the staffs of general and special hospitals throughout the country may be able to render assistance in giving special opinions. In the case of appeals against the result of medical examination the exact mechanism will now be as follows: Three medical assessors, appointed by the Local Government Board, will be attached to the appeal tribunals. Should the appeal tribunal on hearing a case decide that a medical re-examination is desirable, they will forward all the papers bearing on the case to the medical assessors, who will re-examine the man. The decision of the medical assessors will be final as regards the man's physical condition and gradation.

The New Gradations.

We have already defined in general terms the four groups of the new gradation, and can now give them more precisely as follows:—

Grade I. to consist of men who attain the normal standard of health and strength and are capable of the physical exertion suitable to their age.

Grade II. includes those who do not attain the standard of Grade I. from various causes, such as deficient physical development or slight defects, but are yet fit for work of a less strenuous kind. Most of these are capable of improvement by training. Grade I. corresponds to Class A or General Service of the late classification, and Grade II. to classes BI. and CI.—i.e., to garrison duty abroad and at home.

Grade III. includes those who from any cause are not suitable to undergo military training as combatants, although they may be quite fit for one of the auxiliary Services connected with the Army, and fit also for the work on which they are already employed or its equivalent.

Grade IV. includes all those who are unfit both for military service and any work of national importance.

Other Functions of the Medical Department.

Another serious function of the medical department of the Ministry will be to consider the supply of students in the medical schools in its bearing upon the future strength of the medical profession and to determine the necessity for bringing back from the Services men who are now serving in a non-medical capacity. We noted last week the personnel of the medical advisory board which will keep in close touch with medical opinion and in coöperation with existing organisations. To the names there given should now be added that of Mr. Percy Edwards, of Liverpool.

Manual of Medical Standards.

In the manual of general directions for the guidance of medical boards, which is now nearly ready, a scheme is outlined by which every man is seen by each member of the medical board at some stage of his examination, while his final gradation is settled by the consensus of opinion of the members and president. This procedure will meet the complaints which have been made in the past that the president omits to consult the opinion of his board or overrules their decision. The scheme continues:—

When a man wishes to appeal against the gradation of the medical board he must lodge his appeal within five clear days of his examination, and will forward in duplicate any medical certificates he may wish to place before the tribunal. If the appeal tribunal after hearing the case decides that the claim is one in which they think medical re-examination is desirable, they will forward all the documents bearing on the case to the medical assessors appointed by the Local Government Board, accompanied by the appeal tribunal's recommendation that the man should be re-examined. The medical assessors will inform the man of the date on which he should present himself for re-examination, giving at least three clear days' notice. A representative of the medical board which graded the man will be present at the meeting of the medical assessors of the appeal tribunal, if they desire it, in order to supply any information which may be required. The medical assessors will communicate their decision to the chairman of the appeal tribunal, who will then make arrangements for the final adjustment of the man's case. The medical assessors will also give the man a card (known as 3291) showing the grade in which they have placed him.

Questions of principle in the gradation of men suffering from certain disabilities which cannot be decided by reference

to the manual may be stated in writing by the board or assessors concerned and referred to the Ministry, when the matter will be placed before the advisory board of the medical department for an opinion. It will also be within the power of the Ministry to refer such questions to medical men competent to decide on the particular subject.

ITALY AND THE WAR.

We have received from our Correspondent at the Italian front the following medical notes:—

British Hospital at the Italian Front.—During his recent tour of the Italian front Lord Derby paid a visit to the British Military Hospital, which, in the hands of the Italian Army engineers, is arising with marvellous rapidity in the orchard of a farmhouse in a small Austrian village. In the original house are the offices, small wards and wards for sick officers; the main accommodation is in long two-storey buildings of brick and cement, each block containing two wards, one above the other. The operating theatre, with anæsthetising and sterilising rooms, forms a separate building, and there are also a cook-house, a laundry, and a bath-house, with shower baths and small bathrooms. The British Red Cross Society, which has rendered invaluable help in the equipment of the hospital, was represented on the occasion of this visit by its Chief Commissioner for Italy, Lord Monson. The Secretary of State for War made a round of the wards and expressed his complete satisfaction with all the arrangements.

The Medical Services at the Front.—The number of convenient buildings and the excellent state of the roads have been big factors in the medical arrangements for the Army on this front. Field hospitals are established everywhere in fine buildings, and everywhere communications are easy by good roads with plenty of motor transport. Such conditions would seem ideal, and should lead to ideal results if the organisation allowed. But at present there is far too much evacuating from one field hospital to another a few miles further back, with the result that during an offensive all are overcrowded and overworked with the constant stream of wounded, and the latter are apt to get inefficient attention. It is often several days, with a brief stay in as many hospitals, before the originally lightly wounded case at last arrives where his wound can be definitely dressed. By now the simple injury may have become seriously infected; an unnecessarily long stay in hospital is ensured and a corresponding economic loss to the country. It should not be difficult with the amount of motor transport at command to send all but the severely wounded direct from the ambulances to the base hospital, a journey by road of from two to three hours at most, and so leave the advanced hospitals free to deal with the serious cases and keep them as long as needful. Distinguished civilian surgeons have been instant in urging this reform, but at present without success. Wounds of the abdomen, thorax, and cranial cavity, however, are treated in special advanced surgical hospitals under the charge of skilled surgeons, and here the system seems wonderfully perfect under war conditions. The treatment of sickness is very well organised, especially as regards infective maladies, under which category is included diarrhœa. These cases are all sent to special hospitals with ample accommodation in the war zone. The protection of the rest of the country is strictly cared for. All sick are sent to isolation hospitals, where they are bacteriologically certified free from infection before they can leave the zone of war for their homes or territorial hospitals. With the excellent state of health prevailing this year among the troops at the front this seems almost an unnecessary precaution, yet it guarantees the country from epidemic disease and is rendered the more advisable on account of the frequency of disease among the Austrian prisoners, who are all disinfected and bacteriologically examined in the prisoners' concentration camps before being sent to the interior. Over 60 bacteriological laboratories are thus employed in the war area.

Trachoma and Tuberculosis.—The spread of these diseases is seriously occupying the attention of the profession of this country. Before the war men suffering from trachoma and its after-effects were not taken for military service, and rejection for this cause alone reached the number of 31 per mille in Sicily. After the outbreak of war, however, this regulation was no longer enforced, and very shortly it was discovered that the disease was spreading seriously in the Army. An order was at once issued that all such cases should be sent to their homes, with two deplorable results—a great spread of the contagion wilfully among the troops and an involuntary spread among the civilian population. With regard to tuberculosis, here, as probably elsewhere, there is a want of unity in the ideas which govern the medical officers in accepting or rejecting possible cases. Professor Edoardo Maragliano, who speaks with acknowledged authority upon the disease, draws attention to this confusion in an article in the *Giornale di Medicina Militare*, and declares that the sole question before the examining medical officer is whether the man is infected with tuberculosis or not. If the answer is Yes, he must be rejected for the Army, however good his health may seem, for no doctor can guarantee that he has sufficient resistance for the successful endurance of a soldier's life, either within or behind the zone of war. He should not be classified as fit for certain military duties. Both the nation and the Government desire to have no tuberculous subject in the Army; the doctor who rigorously rejects them is rendering a service to the Army to-day and to the country to-morrow.

October, 1917.

MR. FRANCIS DODD'S PORTRAITS.—The leaders of our Navy and Army are being excellently drawn in colours by Mr. Francis Dodd, the examples which have reached us being Sir Douglas Haig, General Smuts, Admiral Sir John Jellicoe, and Admiral Beatty. The reproductions of these portraits can be obtained from *Country Life*, Tavistock-street, London, W.C., at 2*s.* 6*d.* each. They are on a large though not a uniform scale, and are mounted for framing with real good taste.

LEAGUE OF MERCY WAR BAZAAR.—As already announced, the League of Mercy has organised a bazaar to be held at the Ritz Hotel on Wednesday and Thursday next in aid of the voluntary hospitals. Princess Alice, Countess of Athlone, will open the bazaar on the first day and Princess Patricia of Connaught on the second. The bazaar will be opened each day at 2.30 P.M. and the prices for the opening ceremonies will be 10*s.* and 5*s.* respectively. After the opening ceremonies 5*s.* will be charged on the first day and 2*s.* 6*d.* on the second and from 5 to 7 P.M. on the second day 1*s.* Tickets may be obtained at the doors or from Mr. W. and Miss Andrews, honorary organising secretaries, 5, Belsize-park, N.W.3, and Mr. R. M. F. Robertson, 70, Queen Victoria-street, E.C.4.

PURE WHEATEN FLOUR FOR INVALIDS.

THE following is the official Memorandum on permits for the use of pure wheaten flour for invalids issued by the Ministry of Food after consultation with the War Bread Medical Subcommittee of the Royal Society. The Memorandum was required, as some misunderstanding appears to exist as to the granting of permits to use white flour; it is wise, therefore, to indicate the procedure adopted in dealing with applications. These are considered in the first instance by the scientific adviser to the Food Controller acting under the guidance of the War Bread Medical Subcommittee of the Royal Society. After this first sitting of applications doubtful cases are referred to certain members of the subcommittee who have agreed to act as referees, or they are laid before the whole subcommittee. It should be understood that applications are becoming so numerous and the necessity for economising wheat so imperative that it is not possible to accede to all the requests sent in. The committee is of opinion that in many cases no substantial grounds exist for the applications, which appear to be made merely to satisfy some whim of the patient and not because the Government regulation flour has been found to be deleterious. Speaking generally, it may be said that unless some affection of the digestive organs which in the opinion of the War Bread Medical Subcommittee justifies the use of pure wheaten flour is present, an application cannot be granted.

1. *Acute affections of the stomach* (acute gastric catarrh, ulcer in its acute stages, &c.).—In these cases the use of any form of bread whilst the disease is at its height is probably inadmissible. During the convalescent stages the prescription of pure wheaten flour for a limited period may be

permissible if rusks and breakfast biscuits or ordinary bread boiled and sieved, or bread jelly, does not meet the case.

2. *Chronic affections of the stomach.*—In chronic functional disorders of the stomach (which make up the majority of cases of chronic dyspepsia) the use of pure wheaten flour can rarely be allowed for the reason that such cases are so numerous and so protracted in their course that it would be impossible to meet the demand without seriously depleting the wheat-supply of the rest of the population. The use of the present bread, well toasted and thoroughly chewed, or of biscuits and rusks, should be recommended.

In chronic *organic disease* of the stomach (carcinoma and chronic ulcer) white flour may sometimes be advisable if the patient is able to take bread at all.

3. *Acute affections of the intestine* (acute diarrhœa, enteritis, colitis, ulcerative conditions, &c.).—In these cases the same remark applies as in acute affections of the stomach.

4. *Chronic intestinal affections* (chronic diarrhœa, chronic colitis, malignant disease, &c.).—In some of these the use of white flour may be desirable; but evidence would be required to show that ordinary bread, toasted and thoroughly chewed, and the use of other measures have failed to relieve the symptoms.

Cases of disease of the nervous, circulatory, or respiratory systems, or of the urinary organs or skin, or such general conditions as anæmia and diabetes, can rarely be considered suitable for grants.

As regards tuberculosis, there is no evidence that the present bread is injurious. Inquiries have been made from the principal sanatoria for the treatment of this disease, and in the great majority of cases the medical superintendents support the above opinion. No institution for the treatment of this disease is receiving grants of pure wheaten flour.

The conclusion of the subcommittee is that there are very few conditions, in the opinion of the War Bread Medical Subcommittee, in which the use of pure wheaten flour is *essential*. The subcommittee is well aware of the difficult position in which the medical practitioners are placed; but it is necessary to conserve the wheat-supplies of the country, and every means of doing this must be adopted, and, if need be, enforced. Refusal to give a permit does not imply that the medical certificate has been disregarded, but merely that the need of other applicants appeared to be more urgent.

Above all, it is important that no discrimination be made between rich and poor in recommending these grants. Nothing is easier to arouse or more difficult to allay than a suspicion that the poor are denied what the rich find no difficulty in obtaining.

Regarding the war-bread as an ordinary article of diet, the Memorandum states as follows:—

Under war conditions when variety in foods is limited the bread made from G.R. flour is probably a more wholesome article of diet than that made from fine wheaten flour in pre-war times. The flour contains more lime salts than fine wheaten flour, and presumably is therefore more suitable for growing children. It contains a greater variety of proteins which it is important to have, especially if bread enters largely into the dietary. It contains more "germ," which adds to the proteins and increases the fat. It also contains more of the class of substances known as vitamines, about which our knowledge is far from complete, but it is known that a deficiency of these profoundly impairs nutrition. The bread requires to be thoroughly masticated, but if chewed well, or eaten as toast which necessitates chewing, or, finally (in the case of invalids), if it be used as indicated in the preceding paragraph, there are very few people with whom it could disagree.

AN X-RAY INSTALLATION AT WORTHING.—The Worthing Education Committee has decided to purchase and instal at the school clinic an X-ray apparatus mainly for the purpose of the treatment of ringworm. No fewer than 40 cases of ringworm, it was stated at the meeting of the committee, are now excluded from the schools of the town.

SERVICE FOR DOCTORS AND NURSES.—The Vicar of Brighton (the Rev. Prebendary Dormer Pierce) is continuing the custom of holding an annual service for doctors, nurses, and V.A.D. workers, and this was held in the Parish Church at Brighton on Sunday evening last, a large number of medical men, nurses, and ambulance workers attending. The vicar pleaded for close coöperation between priest and doctor. The medical profession was a teacher of benevolence and human pity. Doctors, nurses, and V.A.D. workers were all engaged in the same ministry—the revelation of God as the God of health.

Medical News.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the quarterly examination in Practical Pharmacy, held on Oct. 11th and 12th, the following candidates were successful:—

Abraham Abelson, University College Hospital; Robert Geoffrey Addenbrooke, Birmingham University; Esawy Ahmed, London Hospital; John Binford Barnett, Birmingham University; Jules Samuel Boruchowitz, Brussels and University College Hospital; Gerald Arthur Augustine Bradnack, Guy's Hospital; Geoffrey Wright Dando, Birmingham University; Douglas Alexander Dyer, St. George's Hospital; Harland Bernard Easton, St. Mary's Hospital; Frank Edward Edwards, Manchester University; Francis Malcolm Timothy Flintan, Middlesex Hospital; Lydia Susan Fuller-Maitland and Irene Mary Golding, London School of Medicine for Women; Christopher Frank Good, London Hospital; Ernest Alphonse Hardy, Charing Cross Hospital; Geoffrey Gordon Havers, Cambridge University and St. Bartholomew's Hospital; Janet Hughes, King's College; Reginald Jenner-Clarke, London Hospital; John Kendall, Guy's Hospital; Francis Wharton Lemarchand, St. Bartholomew's Hospital; Horace Sharman Le Marquand, St. Thomas's Hospital; Elisabeth Esther McCulloch, Liverpool University; William Dundas Macrae, London Hospital; Guy Meadows, Guy's Hospital; Margaret Ombler Meek, Charing Cross Hospital; Henry Marie Alphonse Menage, St. Bartholomew's Hospital; Edward Nissim, Bombay University and University College Hospital; Geoffrey Noott, Guy's Hospital; Ruth Emerita Pilgrim and Norah Katharine Priestley, London School of Medicine for Women; Henry Christoffers Powell, Charing Cross Hospital; Hubert Llewellyn Pridham, St. Bartholomew's Hospital; Owen Alfred Llewellyn Roberts, St. Mary's Hospital; Arthur Twynham Spoor, Cambridge University and St. Thomas's Hospital; Edward Algernon Weaver, Birmingham University; and Julius Maurice Winnett, London Hospital.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—A quarterly meeting of the Council was held on Oct. 11th, Sir George Makins, the President, being in the chair. The President reported the death on July 27th of Dr. Theodor Kocher, of Berne, an Honorary Fellow of the College, and stated that he had written to the widow to express the sympathy and condolence of the Council. A letter was read from Surgeon-General Sir Alfred H. Keogh, G.C.B., expressing his great appreciation of having had the dignity of the Honorary Fellowship of the College conferred on him by the Council. The President reported that Surgeon-General Sir Alfred Keogh had attended that day to receive the Diploma of Honorary Fellowship and to sign the Roll, and that, after this ceremony, Sir Alfred Keogh had declared open the exhibition of War Office specimens of military injuries temporarily installed in Rooms 1 and 2 of the Museum. Three months' leave of absence was granted to the President on Government work. Leave of absence was granted to Sir Berkeley Moynihan from the October and November meetings of the Council during his absence abroad on Government duties. The best thanks of the Council were given to Mr. Alban Doran for his valuable services in continuing to arrange and catalogue the collection of surgical instruments in the Museum. The President reported that in response to the request of the Museum Committee he had authorised the temporary installation of the electric light in Rooms 1 and 2 of the Museum for illuminating the exhibition on dark days. The draft report of the Council to be presented to the annual meeting of Fellows and Members was approved. Mr. Bilton Pollard was re-elected a member of the Committee of Management. Sir George Makins was appointed a member of the Court of the University of Liverpool for three years from Jan. 1st next. The President reported that he had granted the use of the theatre for five lectures in October, to be delivered by Mr. Twort, superintendent of the Brown Animal Sanatory Institution. The President reported that he had given permission for the practical examination in physical anthropology, forming part of the B.Sc. London honours examination in human anatomy and morphology for internal students, to be held at the College on Nov. 1st. There are three candidates.

ROYAL INSTITUTE OF PUBLIC HEALTH.—A course of lectures and discussions on Public Health Problems Under War and After War Conditions is to be held in the lecture hall of the Institute (37, Russell-square, London, W.C.1) on Wednesdays in October, November, and December, at 4 P.M., as follows:—Oct. 31st: Health Problems and a State Ministry of Health, by Major Waldorf Astor, M.P.; Nov. 7th: Woman's Health and Work in War Time, by Mrs. Ogilvie-Gordon, D.Sc.; Nov. 14th: The Problem of the Disabled, by Sir Robert Jones; Nov. 21st: Red Cross Work Under War Conditions, by Sir Arthur Stanley; Dec. 5th: Women Workers and the Health of the Nation, by Miss A. M. Anderson; Dec. 12th: Some Aspects of the Tuberculosis Problem—Treatment and Training of Surgical Tuberculosis Cases, by Mr. Henry J. Gauvain, M.R.C.S.; Dec. 19th: Public Health and Alcoholism in Women, by

Lord D'Abernon. The Harben Lectures on the Treatment of Infected Wounds will be given by Dr. Alexis Carrel, of the Rockefeller Institute, New York, on Nov. 26th, 27th, and 28th, at 4 P.M. The principal of the Institute will be in the chair. Medical officers of health, medical practitioners, sanitarians, and others engaged in public health and national services are invited to attend. No tickets of admission are required. Further particulars may be obtained from the Secretary, 37, Russell-square.

THE MINISTRY OF HEALTH.—The Lord Mayor is taking the chair at a National Conference of Sanitary Authorities, convened by the National Association for the Prevention of Infant Mortality and for the Welfare of Infancy, to be held at the Mansion House on Monday, Oct. 29th, from 11 A.M., to consider the proposed Ministry of Public Health, with special reference to safeguarding the interests of motherhood and infancy in connexion therewith. Tickets may be obtained, free of charge, on application to the Secretary, 4, Tavistock-square, W.C. 1.

CENTRAL MIDWIVES BOARD.—A special meeting of the Central Midwives Board was held at Queen Anne's Gate Buildings, Westminster, on Oct. 10th, with Sir Francis H. Champneys in the chair. Certain midwives were struck off the Roll, the following charges, amongst others, having been brought forward:—

Being in attendance at a confinement the midwife neglected to cleanse the child's eyelids at birth, as required by Rule E. 16; in contravention of Rule E. 12 she neglected to provide for the cleanliness and comfort of patients during her attendance, and failed to give adequate directions to the person entrusted with the duty of washing them. The midwife did not enter her records of pulse and temperature in a note-book or on a chart carefully preserved, as required by Rule E. 14, and did not keep her register of cases as required by Rule E. 24; she neglected to disinfect her hands and forearms before touching the generative organs of the patient, as required by Rule E. 4, and neglected to wash the patient's external parts with soap and water, and to swab them with an efficient antiseptic solution on the occasions required by Rule E. 8, and employed for washing the patient the same water as that in which the child had been washed. The midwife not being scrupulously clean in every way, as required by Rule E. 2, neglecting to take with her to a confinement the appliances and antiseptics required by Rule E. 3, and declining to afford reasonable facilities to the duly appointed officer of the local supervising authority for the purpose of investigating her mode of practice, contrary to the provisions of Rule E. 25. A child suffering from inflammation of and discharge from the eyes, and continuing so to suffer during her attendance, the midwife did not explain that the case was one in which the attendance of a registered medical practitioner was required, as provided by Rule E. 21 (5); having continued in attendance on the patient after the tenth day, she neglected to note the fact in her register, with the explanation of the reason therefor, as required by Rule E. 12.

MEDICAL SOCIETY OF LONDON.—The next meeting of this society will be held on Monday, Oct. 22nd, at 8.30 P.M., at 11, Chandos-street, Cavendish-square, W., when Mr. Muirhead Little and Major R. C. Elmslie, R.A.M.C. (T.), will introduce a discussion on Modern Artificial Limbs and their Influence upon Methods of Amputation. There will be a practical demonstration with patients and appliances. Colonial and American medical men on active service will be welcomed at the meeting.

MIDDLESEX HOSPITAL MEDICAL SCHOOL.—The following scholarships, medal, and prizes were awarded during the session 1916-17:—Entrance Scholarships: First, H. B. Shaw; second, E. B. Dancy; third, J. Whitby. Broderip Scholarship, R. E. S. Webb. Lyell Medal and Scholarship and Freeman Scholarship, S. C. Shaw. Hetley Clinical Prize, R. E. S. Webb. Second-year's Exhibition, O. S. Hillman.

ROYAL SANITARY INSTITUTE.—A meeting under the auspices of this institute will take place in the council chamber of the Town Hall, Newcastle-on-Tyne, on Nov. 9th, at 7 P.M., when general discussions on Standards of Meat Inspection under War-time and other Conditions and Structure in Municipal Housing will be respectively opened by Mr. Thomas Parker, veterinary officer and inspector of provisions for Newcastle-on-Tyne, and Mr. John H. Mole, sanitary inspector and surveyor for the Chester-le-Street rural district council. Dr. Philip Boobbyer will preside. On Nov. 10th a luncheon will be given by the sanitary committee of the corporation, and a visit will be afterwards paid to the Belgian village, Elizabethville, when the planning and structure of the temporary and semi-permanent types of the dwellings will be inspected. Applications for tickets should be made to the honorary local secretary, Dr. Harold Kerr, Health Department, Town Hall, Newcastle-on-Tyne; or to the Secretary of the Institute, 90, Buckingham Palace road, London, S.W., not later than Nov. 2nd.

AT the quarterly meeting of the directors of the Naval Medical Compassionate Fund held on Oct. 16th, Surgeon-General W. H. Norman in the chair, the sum of £20 was distributed among the several applicants.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BIRCH, C., M.R.C.S., L.R.C.P., Lond., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Pangbourne district of the county of Berks.

BUCKLE, ISABEL F., M.R.C.S., L.R.C.P. Lond., House Physician at the South London Hospital for Women.

GETHING, JOHN E., M.B., Ch.B. Liverp., Assistant Medical Officer of the Middleton-in-Wharfedale Sanatorium.

MATHEWSON, J., M.B., B.S. R.U.I., Certifying Surgeon under the Factory and Workshop Acts for the Bromley district of the County of Kent.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

ASHTON-UNDER-LYNE, DISTRICT INFIRMARY AND CHILDREN'S HOSPITAL.—House Surgeon. Salary £250 per annum, with board, &c.

BERMONDSEY TUBERCULOSIS DISPENSARY.—Medical Officer. Salary £500 per annum.

BIRMINGHAM (NEAR), ROMSLEY HILL SANATORIUM.—Assistant Medical Superintendent, unmarried. Salary £350 per annum, with board, &c.

BOLTON INFIRMARY AND DISPENSARY.—Female Senior House Surgeon. Salary £300 per annum, with board, &c.

BRIDGWATER HOSPITAL.—House Surgeon. Salary £140 per annum, with board, &c.

BRISTOL ROYAL INFIRMARY.—House Physician and House Surgeon. Salary at rate of £120 per annum, with board, &c.

DERBY, DERBYSHIRE SANATORIUM FOR TUBERCULOSIS, Walton Lane, near Chesterfield.—Resident Assistant Medical Officer. Salary £350 per annum, with board, &c.

EDINBURGH, CRAIG-LOCKHART POORHOUSE AND HOSPITAL.—Assistant Medical Officer. Salary £250 per annum, with board, &c.

EVELINA HOSPITAL FOR CHILDREN, Southwark, London, S.E.—House Physician and House Surgeon. Salary at rate of £160 per annum, with board, &c.

HAMPSTEAD GENERAL AND NORTH WEST LONDON HOSPITAL, Haverstock Hill, N.W.—Casualty Officer for six months. Salary at rate of £150 per annum, with board, &c.

LINDSEY (LINCOLNSHIRE), COUNTY OF THE PARTS OF.—Assistant Medical Officer. Salary £400 per annum.

MANCHESTER EDUCATION COMMITTEE.—Assistant School Medical Officer. Salary £300 per annum.

MANCHESTER, HULME DISPENSARY, Dale-street, Stretford-road.—House Surgeon. Salary £250 per annum, with apartments, &c.

MANCHESTER MATERNITY AND CHILD-WELFARE CENTRES.—Female Medical Officer for Treatment of Children's Diseases. Salary £350 per annum.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Park-place, Cheetham Hill-road.—House Surgeon. Salary £150 per annum, with board, &c.

NETLEY, BRITISH RED CROSS HOSPITAL.—Anæsthetist.

NEWCASTLE-UPON-TYNE, ROYAL VICTORIA INFIRMARY.—Four House Physicians, five House Surgeons, two Accident-room House Surgeons, House Surgeon to Aural and Ophthalmic Department, House Surgeon to Gynæcological Department, House Surgeon to Skin and Venereal Department, and House Surgeon to Out-patient Dressing Department. Also Anæsthetist.

NOTTINGHAM AND MIDLAND EYE INFIRMARY.—Female House Surgeon. Salary £200 to £250 per annum, with board, &c.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—House Physician, Casualty House Surgeon, and House Surgeon for six months. Salary £100 per annum, with board, &c.

READING, ROYAL BERKSHIRE HOSPITAL.—Honorary Assistant Surgeon.

ROCHDALE INFIRMARY AND DISPENSARY.—Senior House Surgeon and Second House Surgeon. Salaries £400 and £200 per annum respectively, with board, &c.

ROTHERHAM HOSPITAL.—Junior House Surgeon. Salary £150, with board, &c.

SALISBURY GENERAL INFIRMARY.—House Surgeon. Salary £150 per annum, with board, &c.

SHEFFIELD CITY HOSPITALS FOR INFECTIOUS DISEASES.—Assistant Resident Medical Officer at Ledge Moor Hospital.

SHEFFIELD ROYAL INFIRMARY.—House Physician. Salary £120 per annum, with board, &c.

SHREWSBURY, ROYAL SALOP INFIRMARY.—House Physician. Salary at rate of £200 per annum, with board, &c.

SOUTHAMPTON, FREE EYE HOSPITAL.—House Surgeon. Salary £100 per annum, with board, &c.

TRURO, ROYAL CORNWALL INFIRMARY.—House Surgeon. Salary £150 per annum, with board, &c.

WALSALL AND DISTRICT HOSPITAL.—Female Assistant House Surgeon and Anæsthetist. Salary £175 per annum, with board, &c.

WEST BROMWICH AND DISTRICT HOSPITAL.—Assistant House Surgeon, unmarried.

WOLVERHAMPTON AND MIDLAND COUNTIES EYE INFIRMARY.—House Surgeon. Salary £200 per annum, with board, &c.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Arnesby, Leicester, and at Paignton, Devon.

Births, Marriages, and Deaths.

BIRTHS.

LEGGAT.—On Oct. 5th, at Killiney, Mill Hill, London, N.W., the wife of Captain G. Leggat, R.A.M.C., of twin sons.

MEADE.—On Oct. 12th, at Oak-lane, Bradford, the wife of Dr. N. G. Meade, of a daughter.

POCOCK.—On Oct. 12th, at Greenfields, Newick, Sussex, the wife of Surgeon W. A. Pocock, R.N., of a daughter.

MARRIAGES.

HENDERSON—MACKEEN.—On Sept. 29th, at Harlington Parish Church, Captain Arthur T. Henderson, C.A.M.C., to Frances, daughter of the late Dr. R. H. MacKeen, of Cape Breton.

LANE—PUREFOY.—On Oct. 4th, at St. Lawrence Church, Chapelizod, Samuel Armstrong Lane, Captain, R.A.M.C., to Dorothy Emma Isolda, third daughter of the Rev. and Mrs. Amyrald Dancer Purefoy, the Rectory, Chapelizod.

MACKENZIE—RICE.—On Oct. 13th, at St. John's Church, Blackheath, by the Rev. F. H. Gillingham, Rector of Bermondsey, assisted by the Rev. W. H. Jordan, Curate of St. John's, Colin Mackenzie, M.D. Cantab., F.R.C.S., Captain, R.A.M.C., son of Mr. A. G. Mackenzie, F.I.A., of 29, Chester-terrace, Regent's Park, to Edith Annie, elder daughter of Mr. D. W. Rice, of Shaftesbury.

POWELL—WOOD.—On Oct. 16th, at All Saints', Margaret-street, by the Rev. H. F. B. Mackay, assisted by the Rev. Canon Arnott and the Rev. Edward Arundell, Sir Richard Douglas Powell, Bart., K.C.V.O., M.D., LL.D., D.Sc., second son of the late Captain Powell, Royal Welch Fusiliers, to Edith Mary Burke, younger daughter of the late Mr. and Mrs. Wood, of Cleveland-square, and granddaughter of the late Dr. Charles Burney, Archdeacon of St. Albans.

TROUNCE—QUARTERMAINE.—On Oct. 11th, at All Souls' Church, Langham-place, W., Thomas Reginald Trounce, Captain, R.A.M.C., to May Agnes, second daughter of Mr. and Mrs. J. H. Quartermaine, of Walton, Farnham, Surrey.

DEATHS.

AUCUTT.—On Oct. 9th, killed in action, Donald Aucutt, Captain, Royal Warwickshire Regiment and L.M.S.S.A., aged 24.

BROMHALL.—On Oct. 7th, at Parkfield, St. Trillo's Avenue, Rhos-on-Sea, Ernest Bromhall, M.R.C.S., L.R.C.P., of 132, Radford Boulevard, Nottingham, late of Rawtenstall, Lancashire. Interred at Rhos-on-Sea, 9th inst.

CHANING-PEARCE.—On Oct. 1st, killed in action, Temporary Captain Wilfrid Thomas Chaning-Pearce, M.C., R.A.M.C., M.B., B.C. Camb.

CHARLES.—On Oct. 6th, of wounds received on July 31st, Captain J. J. P. Charles, M.B.

GILMORE-ELLIS.—On Oct. 8th, at Singapore, W. Gilmore-Ellis, M.D., P.C.M.O., Straits Settlements, after operation, aged 57. (By cable.)

REID.—On Oct. 6th, killed in action, Captain W. Douglas Reid, M.C., R.A.M.C., aged 30.

SAW.—On Oct. 9th, killed instantaneously on the battlefield, Captain Noel Humphrey Wykeham Saw, M.C., R.A.M.C., aged 25.

SHERMAN.—On Oct. 10th, died of wounds whilst serving with Field Ambulance, Captain Reginald Sherman, R.A.M.C., M.B. Cantab., M.R.C.S., L.R.C.P.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

BOOKS, ETC., RECEIVED.

CHURCHILL, J. AND A., London.

Allen's Commercial Organic Analysis. Fourth edition. Vol. IX. Edited by W. A. Davis, B.Sc., A.C.G.I. With Index for all the Volumes. 30s. net.

Short Account of Explosives. By A. Marshall, A.C.G.I., F.I.C., F.C.S., 5s. net.

FOURNIER, L., 264, Boulevard Saint-Germain, Paris.

Chirurgie de Guerre les Fractures: Déplacements, Séquelles, Décalcifications, Raideurs articulaires consécutives. Par Professeur Edmond Delorme, Médecin Inspecteur Général de l'Armée, ancien Président du Comité technique de Santé Membre de l'Académie de Médecine. Fr.10.

KIMPTON, HENRY, London and Glasgow.

Experimental Pharmacology. By D. E. Jackson, Ph.D., M.D. 20s. net.

W. B. SAUNDERS COMPANY, London and Philadelphia.

Roentgen Diagnosis of Diseases of the Alimentary Canal. By R. D. Carman, M.D. (Mayo Clinic), and Albert Miller, M.D. (Mayo Clinic). 25s. net.

Diagnostic Symptoms in Nervous Diseases. By Edward L. Hunt, M.D., Assistant Professor of Clinical Neurology, College of Physicians and Surgeons, New York City. Second edition, revised. 8s. 6d. net.

The Treatment of War Wounds. By W. W. Keen, M.D., LL.D., Emeritus Professor of Surgery, Jefferson Medical College, Philadelphia. 7s. 6d. net.

A Manual of Nervous Diseases. By Irving J. Spear, M.D., Professor of Neurology at the University of Maryland, Baltimore. 12s. 6d. net.

Blood Pressure from the Clinical Standpoint. By Francis Ashley Faught, M.D., formerly Director of the Laboratory of Clinical Medicine at the Medico-Chirurgical College, Philadelphia. Second edition, thoroughly revised. 15s. net.

The Prevention of Disease: a Popular Book on Keeping Well. By Kenelm Winslow, B.A.S., M.D., formerly Assistant Professor of Comparative Therapeutics at Harvard Medical School. 7s. 6d. net.

1916 Collected Papers of the Mayo Clinic, Rochester, Minn. Cloth, 28s. net.

Notes, Short Comments, and Answers to Correspondents.

PUBLIC HEALTH IN EAST AFRICA.

His Excellency H. Conway Belfield, C.M.G., Governor, has forwarded to the Colonial Office a report on the East Africa Protectorate for the financial year 1915–16. It includes the following particulars respecting the health conditions of the various districts:—

Coast Zone.—The average health remained good throughout the year. There were 7112 cases of malaria treated, with only 14 deaths. There were 6 cases of blackwater fever, and 1 patient, a European, died. 27 cases of cerebro-spinal meningitis occurred, with 12 deaths. There were 317 admissions for dysentery, with 39 deaths; 26 Europeans were treated for the disease, of whom 1 died. 12 cases of enteric fever were treated, of whom 9 were Europeans; there were 5 deaths, 4 being Europeans. No case of plague was reported and no infected rats were found. 41 cases of beri-beri, with 1 death, were noted at Mombasa Native Civil Hospital. 6 cases of small-pox were discovered, of whom 2 died. 436 cases of leprosy were reported from settlements at Mombasa, Malinda, and Lamu.

Mountainous Zone.—The number of admissions for malaria was 5352, a large increase over the number admitted in 1914. Nairobi was responsible for the largest number of cases, but every township appeared in the list. Of 520 Europeans affected 2 died; 9 cases of blackwater fever were treated, 2 being Europeans; 1 death occurred in a native case. The virulence of cerebro-spinal meningitis appears to be dying down. During 1915 there were 3 cases among Europeans and 78 among natives, with 3 deaths. An increase was noted in cases of dysentery, 1647 cases being admitted, of whom 89 died; 105 of the cases admitted were Europeans, all of whom recovered; in the previous year there were only 1471 admissions with 49 deaths; the increase is attributed to the changed conditions produced by the war. The admissions for enteric fever rose from 46 (10 deaths) in 1914 to 182 (19 deaths) in 1915; 35 cases occurred amongst Europeans, of whom 3 died. 347 cases of pneumonia were recorded with 62 deaths; 13 of the cases, with 2 deaths, were Europeans.

Kenya and Nyanza Provinces.—4687 cases of malaria were treated, showing a continued increase. There were 3 European cases of blackwater fever, with 1 death. Only 1 case of trypanosomiasis came to light. Cerebro-spinal meningitis is fairly prevalent throughout the Nyanza Province; 27 cases were treated, with 23 deaths. Dysentery showed a notable increase and totalled, including 2 Europeans, 651 admissions, of whom 39 died. Only 2 cases of enteric fever were recorded. Cases of plague have been numerous in Nyanza Province, but figures showing the number of cases in the native Reserves are unobtainable; 33 native cases were admitted to Kisumu Hospital, and of these 29 died. There were 24 admissions of small-pox during 1915, of whom 2 died. An outbreak occurred in Nyanza Province, near the Uganda border, and spread to Kisumu; 514 cases were treated in the North Kavirondo district as out-patients up to March 31st, 1916, and 148 deaths were recorded.

Desert Zone.—1666 cases of malaria were admitted to treatment, and there was one European case of blackwater fever. There were 9 cases of beri beri, none being fatal. Admissions for dysentery numbered only 107, as compared with 373 in the previous year.

According to the Blue-book, just issued, of the Zanzibar Protectorate for the year 1916, the population of the island of Zanzibar is 114,069 and that of Pemba 83,130; the density of population is estimated at 175 per square mile in Zanzibar and 219 in Pemba. The birth-rate (births registered) for the year 1916 was 17·3, as against 19·7 per 1000 in 1915; the death-rate is not stated. Measures are being taken to ensure more accurate registration of births, and it is considered probable that when the registration of all births is secured it will be found that the births equal, or may even exceed, the deaths, contrary to opinions based on the figures now available.

The islands of Zanzibar and Pemba were free from any severe epidemic of disease during the year and the health of the community was fair. 23 deaths from tuberculosis and 16 deaths from malaria were so certified. These figures are not comparable with those for previous years and, although they do not accurately indicate the true prevalence of these diseases, only 25 per cent. of all deaths being certified by qualified medical men, they are the only figures available which are at all accurate. Three deaths were certified from blackwater fever. No case of plague was reported during the year, but there were 18 cases of small-pox, of which 3 were fatal. There were 8 cases, all fatal, of cerebro-spinal meningitis, and 6 deaths from tetanus occurred. The number of lepers in the two islands amounts probably to about 450. Of these 107 are segregated in one settlement in Zanzibar, administered by the Roman Catholic Mission under the supervision of the medical officer of health, and 135 in three settlements in Pemba, while the remainder are at large.

BACTERIOLOGICAL RESEARCH IN NEW ZEALAND.

To the Editor of THE LANCET.

SIR,—Could any of your readers give me any information as to the prospects for a bacteriologist in New Zealand next year or after the war? Could a living be made out of pathological and bacteriological work alone, or would it have to be part of general medical work? Any information or source from which information can be obtained will be thankfully received by,

Yours truly,

Oct. 13th, 1917. INQUIRER (1).

OCT. 18TH: DIES SANCTI LUCÆ.

THAT St. Luke was a practising physician is now generally accepted. Baring-Gould, in his "Lives of the Saints," considers that he was a slave specially trained to act as family doctor to some patrician family in accordance with the custom of the time. Dr. Clapton, in his "Life of Saint Luke," considers that St. Luke went through a definite medical training and graduated at the University of Antioch. Miss Stawell, in an illuminating paper which she read at the last International Medical Congress in London, suggests that he was well acquainted with Virgil and influenced by Virgil's writings. Some have gone so far as to suggest that St. Luke and Virgil were the same person, but this is out of the question. Virgil died B.C. 19 and St. Luke was not born until five years later.

AN UNKNOWN SCULPTOR.

To the Editor of THE LANCET.

SIR,—In the new building of the University of Edinburgh, just outside the entrance to the Anatomical Museum, there stood in 1892 a Grecian statue of a discobolus (?) which, according to Sir William Turner, the then professor of anatomy, was about the most perfect statue showing the muscular development. Will any of your readers kindly let me know the full particulars as regards the sculptor, and where the original is to be seen now. I do not find it figured in any of the ordinary works on Grecian sculpture.—I am, Sir, yours faithfully,

Sept. 10th, 1917. D. A. T.

A NEW FRACTURE SUSPENSION APPARATUS.

Dr. J. M. Barlet, medical officer in charge of the French Hospital, Shaftesbury Avenue, has called our attention to the fact that the apparatus for slinging fractured limbs exhibited at the McCaul Hospital for Officers, and described in THE LANCET of Sept. 15th, has been in use for a long time at the American Red Cross Hospital of Paris, and was described and figured by Dr. J. Blake, médecin-chef and director of this hospital, in the *Archives de Médecine et de Pharmacie Militaires*. We have seen a reprint of Dr. Blake's article, published by L. Fournier, Paris, in 1916, in which are illustrated precisely the apparatus shown to our representative at the McCaul Hospital. Dr. Blake writes:—

> Without wishing to detract from the reputation of Miss Gasetti, who has done very good work over here, I must say that she has claimed originality for much apparatus which has not only been in use for a long time but which she first saw in the service for the surgeons under whom she was serving. Of course, the treatment of fractures by suspension and traction is not at all new, and consequently no one can claim it as their special method, and I do not think for this reason that this particular treatment should be given my name any more than Miss Gasetti. All I have done is simply to standardise the method by which it can be carried out systematically and with the materials which can most easily be obtainable.

CUPRASE.

To the Editor of THE LANCET.

SIR,—I shall be much obliged if any of your readers can inform me as to the result of use of cuprase in treatment of cancer in England.—I am, Sir, yours faithfully,

Oct. 12th, 1917. INQUIRER (2).

DOUBLE-YELKED EGGS.

To the Editor of THE LANCET.

SIR,—In THE LANCET of Oct. 6th a correspondent writes of an egg with two yelks. I have had this season from my poultry-yard 20 double-yelked eggs of large size, necessitating the use of a wineglass (circumference 7 in.) as egg-cup.

I am, Sir, yours faithfully,

Oct. 15th, 1917. ANOTHER READER.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Oct. 17th, 1917.

Date.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Oct. 11	...	79	53	40	39	42	Fine
,, 12	0·19	66	53	42	44	47	Cloudy
,, 13	0·40	63	49	43	44	46	Cloudy
,, 14	0·11	77	53	39	38	39	Fine
,, 15	...	82	52	39	39	40	Fine
,, 16	0·03	63	55	40	49	51	Raining
,, 17	0·35	70	58	51	54	55	Raining

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war.

The following journals, magazines, &c., have been received:—Middlesex Hospital Journal, Dublin Journal of Medical Science, Cleveland Medical Journal, Annales de l'Institut Pasteur, Archives Médicales Belges, Children's Diseases, Medical Journal of South Africa, Symons's Meteorological Magazine, Shield, Homœopathic Recorder.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, Oct. 22nd.

ODONTOLOGY (Hon. Secretaries—F. N. Doubleday, J. Howard Mummery): at 8 P.M.
Inaugural Address:
By the President, Mr. J. H. Badcock.
Paper:
Mr. George Northcroft: A Short Account of a Year's Work at a Jaw Injury Centre in the London Command.

Thursday, Oct. 25th.

BALNEOLOGY AND CLIMATOLOGY (Hon. Secretaries—C. W. Buckley, J. Campbell McClure): at 6 P.M.
Inaugural Address:
The President, Dr. Preston King (Bath): Spa Treatment.

NEUROLOGY (Hon. Secretaries—C. M. Hinds Howell, E. G. Fearnsides): at 8.30 P.M.
Inaugural Address:
By the President, Dr. R. Percy Smith: Aphasia in relation to Mental Disease.

Friday, Oct. 26th.

STUDY OF DISEASE IN CHILDREN (Hon. Secretaries—A. S. Blundell Bankart, G. E. C. Pritchard, C. P. Lapage): at 4.30 P.M.
Cases:
Dr. Robert Hutchison: Note on Three Cases of Melæna Neonatorum treated by the Injection of Human Blood or Blood Serum.
Dr. Eric Pritchard: Case for Diagnosis.
And other cases.

MEDICAL SOCIETY OF LONDON, 11, Chandos-st., Cavendish-sq., W.
MONDAY.—8.30 P.M., Discussion on Modern Artificial Limbs and their Influence upon Methods of Amputation (introduced by Mr. M. Little and Major R. E. Elmslie, R.A.M.C.). There will be a Practical Demonstration with patients and appliances.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.
TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.
WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.
THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.
FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.
SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.
TUESDAY.—4 P.M., Dr. C. Kempster: X Rays. The Tube and its Control. Measurement of Dose.
THURSDAY.—5 P.M., Chesterfield Lecture:—Dr. M. Dockrell: Anomalies of Pigmentation and What they Indicate.

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